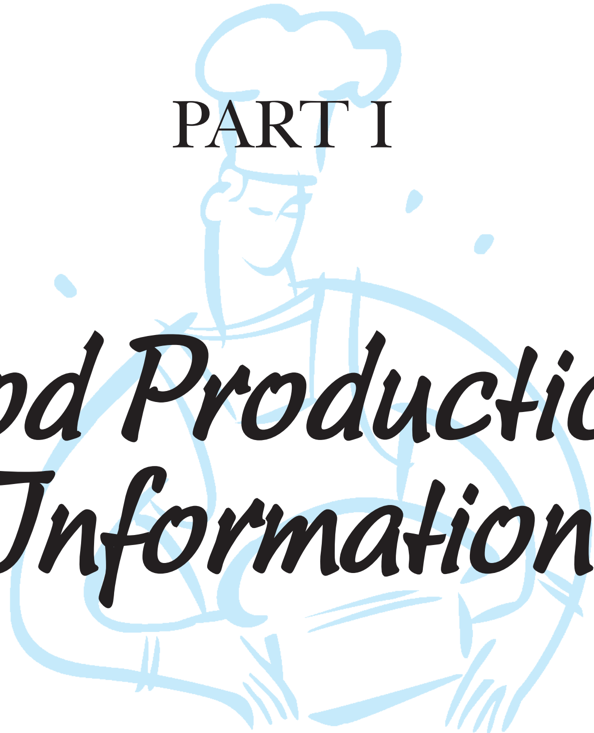
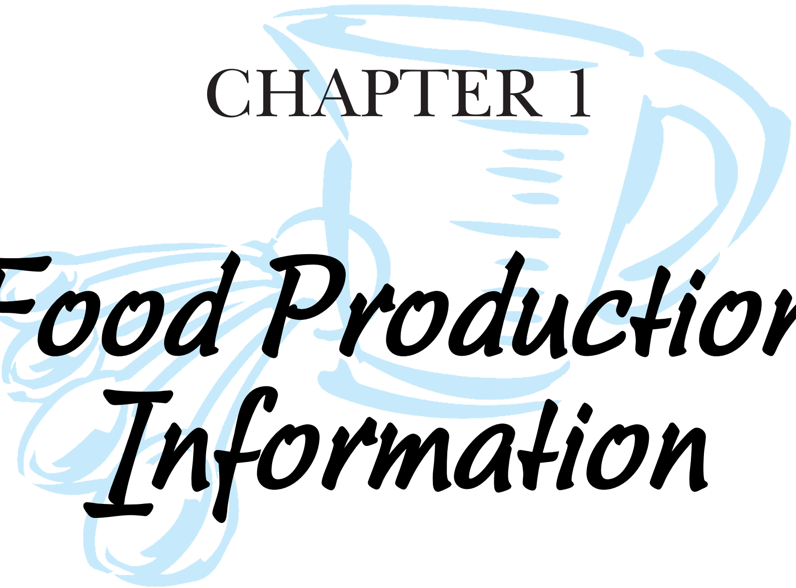
PART I



Food Production Information

CHAPTER 1

Food Production Information



Information in this section is presented as a guide for ordering food, for adjusting recipes, and for the planning, preparation, and serving of food. Quantities to prepare are based on 50 average-size portions, as are most of the recipes, but adjustments may need to be made to fit individual situations. Rarely is 50 the exact number to be served, and the portion size will vary according to the type of foodservice and the needs of the individuals in the group. Tables are included that will assist with these recipe adjustments.

Most ingredients in the recipes are given in weights, but if volume measurements (teaspoons, tablespoons, cups, quarts, or gallons) are to be used, tables in this section will assist in converting from weights to measures. Metric measures are not used in the recipes, but charts for converting to metric are included.

Basic information on cooking temperatures, food equivalents and substitutions, and equipment capacity is also given. A guide for use of herbs and spices and a glossary of cooking and menu terms are found at the end of the book.

HOW TO USE TABLES AND GUIDES

Table 1.1—Amounts of Food to Serve 50. This table (pp. 10–20) suggests amounts of food to purchase and prepare for 50 persons, based on the portion size listed in the table. If larger or smaller servings are needed or if the number of portions required is other than 50, an adjustment in the amount to prepare or purchase must be made. Because preparation losses must be considered in determining the amount to purchase for 50 portions, the ready-to-serve raw yield or the yield of cooked product is given for some products, with the amount as purchased (AP) to buy. The yields, which are given in decimal parts of a pound, can be converted to ounces by using Table 1.27 (p. 54).

Table 1.2—Approximate Yield in the Preparation of Fresh Fruits and Vegetables. When ordering fresh fruits and vegetables, the loss in preparation must be considered when determining the amount to buy. The approximate yield after preparation of one pound of fruit or vegetable, listed in this table (p. 21), is given in decimal parts of a pound but can be converted to ounces by referring to Table 1.27.

Table 1.3—Food Weights and Approximate Equivalents in Measure. Information in this table (pp. 22–31) is useful when converting recipe ingredients from weight to measure or vice versa and is helpful in adjusting or enlarging recipes.

Table 1.4—Basic Equivalents in Measures and Weights. Table 1.4 (p.31) is useful when converting measures (gallons, quarts, or cups) to smaller units such as cups, tablespoons, or teaspoons. Metric equivalents are given for commonly used weights and measures.

Table 1.5—Weight and Approximate Measure Equivalents for Commonly Used Foods. In Table 1.5 (pp. 32–35), the equivalent measures (teaspoons, tablespoons, and cups) are given for selected ingredients, such as flour, salt, and sugar, that appear repeatedly in recipes. This information is the same as that given in Table 1.3 except that the equivalents are given for weights from 1 to 16 ounces.

Table 1.6—Metric Equivalents for Weight, Measure, and Temperature. Table 1.6 (p. 36) provides information that will be helpful in converting weights, measures, and temperatures as given in recipes to metric equivalents.

Table 1.7—Convection Oven Baking Times and Temperatures. Information in this table (p. 37) is useful when using convection ovens. Times and temperatures in recipes included in *Food for Fifty* have been tested using conventional ovens.

Table 1.8—Deep-Fat Frying Temperatures. Table 1.8 (p. 38) provides guidelines for the deep-fat frying of different types of menu items.

Table 1.9—Coatings for Deep-Fat Fried Foods. Proportions of ingredients are given (p. 39) for typical coatings for deep-fat fried foods.

Table 1.10—Dipper Equivalents. Approximate measure and weight for different-sized dippers (scoops) are given (p. 39). Suggested uses for different food products are also included.

Table 1.11—Ladle Equivalents. Table 1.11 (p. 40) gives measures and approximate weights for different-sized ladles and the size to use for different menu items.

Table 1.12—Cold Food Storage Temperatures. Recommended refrigerator and freezer storage time and temperatures are given (p. 40) for safe storage of foods.

Table 1.13—Refrigerator Defrosting Times for Meats, Seafood, and Poultry. Approximate defrosting times are given (p. 41) for roasts, chops, steaks, and poultry.

Table 1.14—Temperatures and Bacteria Growth. The relationships between temperature and bacteria growth are given (p. 41).

Table 1.15—Safe Internal Temperatures for Cooked Foods. Table 1.15 (p. 42) provides safe end-point cooking temperatures for meats, fish, and poultry.

Table 1.16—Food Serving Temperatures and Holding Times. Serving temperatures in this table (p. 43) are those recommended for optimum food quality and safety.

Table 1.17—Food Cooling and Storage Procedures. Recommended procedures for safely cooling foods are provided (p. 44).

Table 1.18—Time and Temperature Standards for Reducing Food Safety Hazards of Potentially Hazardous Foods (PHF). Table 1.18 (p. 45) provides information that will be helpful in developing a Hazard Analysis Critical Control Point (HACCP) plan.

Table 1.19—General Guidelines for Handling Food Safely. This table (p. 46) describes practices that are essential for handling food safely.

Table 1.20—Recommended Mixer Bowl and Steam-Jacketed Kettle Sizes for Selected Products. This table (p. 47) is helpful in determining the size of mixer bowl and steam-jacketed kettle needed for selected food items in portions ranging from 50 to 500. If the equipment on hand is not large enough for the amount required, the recipe may need to be made in two or three batches.

Table 1.21—Pan Capacities for Baked Products. This table (p. 48) gives the maximum capacity of different-sized pans for baking breads, cakes, or pies and is useful when enlarging or adjusting recipes.

Table 1.22—Counter Pan Capacities. Capacities, suggested uses, and number of portions for different sizes of counter pans are given in this table (p. 49).

Table 1.23—Common Can Sizes. Can sizes, with approximate weight or measure and number of portions, are included in this table (p. 49) as a purchasing guide.

Table 1.24—Ingredient Substitutions. This table (pp. 50–51) is useful when it is necessary to substitute one ingredient for another in a recipe.

Table 1.25—Ingredient Proportions. This table (p. 52) gives the relative proportion of ingredients in preparing certain types of foods. It is useful when evaluating recipes for the proper amount of leavening agents, seasonings, and thickening agents.

Table 1.26—Guide for Rounding Off Weights and Measures. When enlarging home-sized recipes, the resulting quantities may be difficult to measure. Table 1.26 (p. 53) aids in rounding fractions and complex measurements into amounts that are as simple as possible to weight or measure while maintaining the accuracy needed for quality control.

Table 1.27—Ounces and Decimal Equivalents of a Pound. This table (p.54) is useful when increasing or decreasing recipes. The multiplication or division of pounds and ounces is simplified if the ounces are converted first to decimal parts of a pound.

Table 1.28–1.30—Direct-Reading Tables for Adjusting Recipes. These tables include amounts of ingredients needed for varying portions, from 25 to 500. Table 1.28 (pp. 56–57) is used when ingredient amounts are given in *weights* and portion yields are divisible by 25. In Table 1.29 (pp. 58–63) ingredients are stated in *volume* measurement (teaspoons, tablespoons, cups, quarts, and gallons) and portions are divisible by 25. Table 1.30 (pp. 64–67) is especially useful when enlarging home-sized recipes. Ingredients are in *volume* measurement for yields from 8 to 96 portions.

RECIPE DEVELOPMENT AND CONSTRUCTION

Recipe files are a valuable resource for food production staff when general principles of recipe development and construction are followed. The following are suggestions for writing quantity recipes.

A standard recipe format includes a *recipe title* that is simple and factual, describing the food and an indication of the main ingredients and general method of preparation. Products with a name generally understood, such as chili, do not need additional descriptors. Recipe titles should provide the information necessary to locate a particular recipe in the recipe file. *Indexing* recipes so they can be quickly retrieved is useful.

Names of *ingredients* should be consistent and listed in the order in which they are used in preparation. List first all ingredients that must be preprepared for a later step so they will be ready when needed. Using a descriptive word before the ingredient tells the kind and form of food as purchased, or the cooking or heating required before the food is used in the recipe, for example, cooked chicken, diced tomatoes. The descriptive words used after the ingredient tell the preparation necessary to make the form of food different from the form as purchased or cooked, for example, cooked chicken, diced; diced tomatoes, drained. For additional clarification, ingredients showing a weight gain or loss during preparation are often marked AP (as purchased) or EP (edible portion).

List *weights* when possible. *Measures* should be given in terms of standard measuring utensils such as cups, quarts, and gallons.

Portion size is the amount served to each customer and *yield* is the total batch weight or number of servings the recipe will make. The portion size may be count, measure, or weight. Identifying *serving utensils* that are correctly sized for the portion size will aid in making yield predictions accurate.

Procedures are written in sequential order. Directions should be simple, easy to understand, and placed with the ingredients involved in the production step. When possible, each step should begin with an action verb such as *blend, add, mix,* or *stir.* Keep directions short. Descriptive terms are not used in the directions unless needed for clarity. It is helpful if basic procedures and terminology are uniform for all recipes using similar products or similar production steps. Timing information for such procedures as mixing, cooking, and marinating is important to include. In the procedure section, note instructions for scaling or panning products and end-point temperatures. Quality standards for the finished product are helpful to production staff when written on the recipe.

Group *equipment* in a way to simplify gathering. Identify oven temperature for baked products.

RECIPE ADJUSTMENT

Recipes often need to be adjusted to meet the requirements of an individual foodservice. For example, the number of portions may need to be increased from 50 to the exact number to be served, or an adjustment in portion size might better reflect the policy of the institution and the requirements of the clientele. Enlarging home-size recipes may require converting household measurements to weights and adjusting certain ingredient proportions as the recipes are expanded. These procedures, as well as directions for converting to metric weights and measures, are explained in the pages that follow.

Converting from U.S. Measurement to Metric

Two approaches are possible for converting recipes from U.S. to metric measures: soft conversion and hard conversion. *Soft conversion* translates weights and measures into their exact metric equivalents. An ounce would become 28.3 grams; a quart would be 0.95 liter. This method produces numbers that may be awkward to work with, and equipment may not be available to measure ingredients to the degree of accuracy required.

Hard conversion changes weights and measures to round metric sizes. For example, a 1-ounce portion

would convert to either 25 or 30 grams, but not to 28.3 gams; 1 quart would be changed to 1 liter. This method may be satisfactory for recipes that are not sensitive to formula adjustments, such as soups and beverages, but may not be suitable for cakes, breads, and other products in which accurate ingredient ratios are critical. Testing recipes to evaluate acceptability is recommended when using the hard conversion method. (Table 1.6 shows metric conversions.)

Converting from Weight to Measure

Quantities of most dry ingredients in recipes in this book are given by weight in ounces and pounds. If accurate scales are not available, however, or if scales do not have graduations for weighing small amounts, then the weights of ingredients may need to be converted to measures. A number of tables will be helpful:

- *Table 1.3*—Food Weights and Approximate Equivalents in Measure (pp. 22–31)
- *Table 1.4*—Basic Equivalents in Measures and Weights (p. 31)
- *Table 1.5*—Weight (1–16 oz) and Measure Equivalents for Commonly Used Foods (pp. 32–35)
- *Table 1.26*—Guide for Rounding Off Weights and Measures (p. 53)
- *Table 1.27*—Ounces and Decimal Equivalents of a Pound (p. 54)

The following example illustrates the procedure for converting ingredients in Baking Powder Biscuits (p. 110) from weight to measure.

- Change 5 pounds flour to measure by multiplying by 4 cups. Turn to Table 1.3 (pp. 22–31).
- The resulting 20 cups would be equivalent to 5 quarts. See Table 1.4 (p. 31). For ingredients other than flour, a gallon measure should be used.
- By referring to Table 1.5 (pp. 32–35) the 5 ounces of baking powder and 1 pound 4 ounces of shortening may be converted quickly by finding the amount in the appropriate column or adding the columns together. The same information is included in the longer table (Table 1.3, pp. 22–31), but for conversion of small amounts of commonly used foods, Table 1.5 is useful.

Increasing and Decreasing Recipe Yields

It may be necessary to change recipe yields in this book to meet the needs of individual situations. Recipes may need to be adjusted to produce batch sizes compatible with preparation equipment, such as mixers, ovens, and steam-jacketed kettles, or consistent with pan sizes available. See Tables 1.20–1.22 for recommended equipment sizes and pan capacities. Recipes may also need adjustment as portion sizes are increased or decreased or as purchase units for ingredients change.

Three methods commonly used to adjust recipe yields are the *factor method,* the *percentage method,* and *direct-reading measurement tables.*

Factor Method

In the factor method, a conversion factor is determined and multiplied by each ingredient in the recipe. This process is explained in the following steps:

Step 1a When portion size remains the same: Divide the desired yield by the known yield of the recipe being adjusted to obtain the conversion factor. For example, to increase a 50-portion recipe to 125 portions, divide 125 by 50 for a factor of 2.5.

Step 1b When portion size changes: Determine the total yield of the existing recipe by multiplying the number of portions by the portion size. Determine the total yield desired in the new recipe by multiplying the number of portions desired by the desired portion size. Determine the conversion factor by dividing the total (new) yield by the total (old) yield. For example, to increase a 50-portion recipe (3-oz portion) to 125 portions (4-oz portion):

a. Total original yield is $50 \times 3 = 150$ oz
b. Total desired yield is $125 \times 4 = 500$ oz
c. 500 divided by 150 = a conversion factor of 3.3

Step 2 Wherever possible, convert ingredients to weight. If amounts of some ingredients are too small to be weighed, leave them in measure.

Step 3 Multiply the amount of each ingredient in the original recipe by the factor. To work with decimal parts of a pound instead of ounces for this multiplication, Table 1.27 will be helpful.

Step 4 Multiply the original total weight of ingredients by the factor. Multiply the pounds and ounces separately.

Step 5 Add together the new weights of all ingredients for the adjusted recipe. If the answers in Steps 4 and 5 are not the same, an error exists and the calculations should be checked. (A slight difference may exist because of rounding the figures.)

Step 6 Change weights of any ingredients that can be more easily measured than weighed, to measure.

Step 7 Check all amounts and use Table 1.26 for rounding off unnecessary fractions to simplify weights or measures as far as accuracy permits.

The following example illustrates the procedure for adjusting Baking Powder Biscuits from 100 biscuits to 500, using the factor method of adjustment:

Factor Method Table

Step 1: Derive the factor	*Ingredients*	*Original recipe*	*Step 2: Convert to weight*	*Step 3: Multiply by factor*	*Steps 6 and 7: Change to measure and simplify*
$\frac{500 \text{ (new)}}{100 \text{ (original)}} = 5 \text{ (factor)}$	Flour, all-purpose	5 lb	5 lb	25 lb	25 lb
	Baking powder	5 oz	5 oz	25 oz	1 lb 9 oz
	Salt	2 Tbsp	$1\frac{1}{3}$ oz	$6\frac{1}{2}$ oz	$6\frac{1}{2}$ oz
	Shortening, hydrogenated	1 lb 4 oz	1 lb 4 oz	6 lb 4 oz	6 lb 4 oz
	Milk	$1\frac{3}{4}$ qt	<u>3 lb 8 oz</u>	<u>17 lb 8 oz</u>	2 gal + $\frac{3}{4}$ qt
Steps 4 and 5: Total weight			10 lb 2 oz	50 lb 11 oz	

Percentage Method

The percentage method of recipe adjustment often is desirable, especially for large-volume production where batch sizes may vary greatly. Once the ingredient percentage has been established, it remains constant for all future adjustments. Recipe increases and decreases are made by multiplying the percentage of each ingredient by the total weight desired. Checking ingredients for proper recipe balance is possible, because the percentage of each ingredient is available. Some computer recipe systems use the percentage method of recipe adjustment. This process is explained in the following steps:

Step 1 Convert all ingredients from measure or pounds and ounces to pounds and tenths of a pound (see Tables 1.3 and 1.27). Make desired equivalent ingredients substitutions such as frozen whole eggs for fresh eggs, nonfat dry milk and water for liquid milk. Use edible portion (EP) weights when a difference exists between EP and as purchased (AP) weights (see Table 1.1). Individual meat items and other meats in entree recipes that do not require the meat to be cooked prior to combining with other ingredients are calculated on AP weight. Examples are pork chops, meat loaf, and Salisbury steak.

Step 2 Total the weight of ingredients in the recipe, using EP weight where applicable.

Step 3 Calculate the percentage of each ingredient in relation to the total weight, using the following formula:

$$\frac{\text{individual ingredient weight}}{\text{total weight}} = \text{percentage of each ingredient}$$

The sum of the percentages must equal 100.

Step 4 Check the ratio of ingredients. Standards have been established for ingredient proportions of many items. The ingredients should be in proper balance before going further.

Step 5 Establish the weight needed to give the desired number of servings. The weight will be determined by portion size multiplied by the desired number of servings to be prepared. This weight may need to be adjusted because of pan sizes or equipment capacity (see Tables 1.20–1.22).

Step 6 Handling loss must be added to the weight needed, and it may vary from 1 to 10 percent, depending on the product. Similar items produce predictable losses, and with some experimentation these losses can be assigned accurately. The formula for incorporating handling loss is as follows:

$$\text{total weight needed} = \frac{\text{desired yield}}{100 \text{ percent} - \text{assigned handling loss percent}}$$

For example, cake has a handling loss of approximately 2 percent, and 72 lb of batter is needed to make nine 18 × 26 × 2-inch pans. To determine the total amount of batter

Percentage Method Table

Ingredients	*Original recipe*	*Step 1: Convert to decimal weights*	*Step 3: Calculate percentage*	*Step 7: Calculate weights*	*Step 8: Convert to pounds and ounces*
Flour, all-purpose	5 lb	5.0 lb	49.276	25.52 lb	25 lb 8 oz
Baking powder	5 oz	0.313 lb	3.085	1.60 lb	1 lb 10 oz
Salt	2 Tbsp	0.0839 lb	0.827	0.43 lb	6¾ oz
Shortening, hydrogenated	1 lb 4 oz	1.25 lb	12.319	6.38 lb	6 lb 6 oz
Milk	1¾ qt	3.5 lb	34.493	17.86 lb	2¼ gal
Step 2: Total weight		10.1469 lb	100.00	51.79 lb	

Step 4:
Check ratio of ingredients to see if they are within acceptable guidelines.

Step 5:
Establish needed weight: $\frac{10.1469 \text{ (total weight of 100 biscuits)}}{100} = 0.1015 \text{ lb (weight per biscuit)}$

500 (desired yield) × 0.1015 lb = 50.75 lb of dough needed before handling loss

Step 6:
Calculate handling loss. Estimated handling loss 2 percent:

$$\frac{50.75 \text{ lb (desired yield)}}{\substack{98 \text{ percent} \\ (100 \text{ percent} - 2 \text{ percent})}} = 51.79 \text{ lb total dough needed}$$

to be made, divide 72 lb by 98 percent (100 percent less 2 percent handling loss). Using this formula, as demonstrated in the Percentage Method Table shown at the top of this page, a recipe calculated for 73.47 lb of batter is needed.

Step 7 Multiply each ingredient percentage by the total weight to give the exact amount of each ingredient needed. The total weight of ingredients should equal the weight needed as calculated in Step 6. Once the percentages of a recipe have been established, any number of servings can be calculated, and the ratio of ingredients to the total will remain the same.

Step 8 Unless scales are calibrated to read in pounds and tenths of a pound, convert to pounds and ounces (Table 1.27) or to measure (Table 1.3). Use Table 1.26 for rounding off unnecessary fractions. If volume measurements are required, Table 1.3 is helpful.

The example in the table above illustrates the procedure for adjusting Baking Powder Biscuits from 100 biscuits to 500, using the percentage method of adjustment.

Enlarging Home-Size Recipes

Before enlarging a small recipe, be sure the recipe is appropriate for large-quantity production and that the same quality can be achieved in the larger amount. Appropriate equipment and pans also must be available. Quantity production procedures used in the particular foodservice may need to replace small-scale techniques.

Enlarging a small-quantity recipe in steps is more likely to be successful than increasing size too quickly. Following are suggestions for expanding home-size recipes:

Step 1 Prepare the product in the amount of the original recipe, following the quantities and procedures exactly and noting any procedures that are unclear or any problems that occur during preparation.

Step 2 Evaluate the product and decide if it is acceptable for the foodservice. If adjustments are necessary, revise the recipe and make the product again. Prepare the small- size amount until the product is satisfactory.

Step 3 Double the recipe or expand to an appropriate amount for the pan size that will be used, and prepare the product, making notations on the recipe of any changes you make. For example, additional cooking time may be needed for the larger amount. Use Table 1.30 for increasing recipe size. Evaluate the product and record the yield, portion size, and acceptability.

Step 4 Double the recipe again, or if the product is to be baked, calculate the quantities needed to

prepare one baking pan of the size that will be used in the foodservice. Use Table 1.30 for increasing recipe size. If ingredients are to be weighed, home-size measures should be converted to pounds and ounces or to pounds and tenths of a pound before proceeding further. Prepare and evaluate the product as before.

Step 5 If the product is satisfactory, continue to enlarge by increments of 25 portions or by pans until approximately 100 portions are prepared. Recipes with larger yields should be evaluated for acceptability and adjustment made each time the yield is increased significantly.

REDUCING FAT, SODIUM, AND SUGAR

It is often necessary to reduce the fat, sodium, and sugar content of recipes to meet the nutritional goals of an individual foodservice. Some changes in appearance, taste, or quality can be expected and recipe experimentation is advised. Following are suggestions to decrease the fat, sodium, or sugar content of recipes.

Decreasing fat in meat, fish, and poultry

- Trim visible fat from meats and use lean cuts.
- Remove skin and excess fat from poultry.
- Substitute poaching, grilling, baking, roasting, or broiling for frying.
- Substitute ground poultry for part or all of the ground beef in casseroles.
- Use extra-lean ground beef in casseroles and rinse under running water after browning.
- Moisten meats with wine, stock, or lemon juice instead of high-fat drippings, and season with herbs.
- Add raw meat to stews and sauces without browning first.

Decreasing fat in egg products

- Replace some of the egg yolks with egg whites or egg substitutes.

Decreasing fat in sauces and soups

- Reduce the amount of fat used to sauté vegetables. To prevent burning, cook over medium heat, cover the pan, and stir often.
- Substitute low-fat or nonfat milk or evaporated skim milk for whole milk or cream.
- Substitute low-fat cheese for whole milk cheeses.
- Substitute part or all plain low-fat or nonfat yogurt for sour cream. In cooked sauces, add 1 tablespoon of cornstarch to each cup of yogurt before heating. Do not boil.
- Chill stocks and remove hardened fat before using.
- Thicken sauces with a cornstarch or flour paste instead of a roux.

Decreasing fat in salad dressings

- Substitute half of the oil with vinegar, lemon juice, vegetable juice, fruit juice, or plain low-fat yogurt.
- Use low-fat or nonfat mayonnaise and cream cheese.

Decreasing sodium

- Omit part or all of the salt and season with herbs and spices (see Appendix B for suggestions).
- Make stocks instead of using commercially prepared stocks and bases.
- Purchase low- or reduced-sodium products.
- Rinse highly salted products such as tuna.

Decreasing sugar

- Reduce the amount of sugar in recipes and substitute thawed frozen juice concentrates to sweeten product.
- Purchase low- or reduced-sugar products.

TABLE 1.1 Amounts of food to serve 50[a] (pp. 10–20)

Food	*Serving portion*	*Amount for 50 portions*	*Miscellaneous information*
BEVERAGES			
Cider	4 oz (½ cup)	2 gal	64 4-oz portions
Cocoa	6 oz (¾ cup)	2½ gal	50 6-oz portions
Unsweetened powder		8 oz	
Instant mix		2½ lb	
Coffee	6 oz (¾ cup)	2½ gal	
Regular or urn grind		1–1½ lb	
Freeze-dried		2–3 oz	
Instant		3 oz	
Lemonade	8 oz (1 cup)	3 gal	48 8-oz portions
Frozen concentrate		3 32-oz cans	dilute 1:4 parts water
Orange juice, see Juices			
Punch	4 oz (½ cup)	2–2½ gal	1 gal yields 32 4-oz portions
Tea			2½ gal yields 50 4-oz portions plus 30 refills
Hot	6 oz (¾ cup)	2½ gal	
Bulk		2 oz	Amount may vary with quality of tea
Iced	8 oz (1 cup)	3 gal	48 8-oz portions
1-oz bag		6 bags	6 1-oz bags make 3 gal
Instant		1–1½ oz	
Wine	See Tables 17.1 and 17.2		
BREAD AND CRACKERS			
Biscuits, baking powder	1 biscuit	4½ doz	
Dough ready for baking		5 lb	
Mix		2½ lb	
Bread			
1½-lb loaf	1 slice	2½ loaves	24 slices per loaf
2-lb pullman	1 slice	1½ loaves	36 slices per loaf
Breads, quick 5 × 9 × 2¾-inch loaves	1 slice	4 loaves	16 slices per loaf
Coffee cake, 12 × 18 × 2 inches	3 × 2¼ inches	2 pans	Cut 4× 8
Batter, ready to bake		5–6 lb per pan	
Crackers			
Graham	2 crackers	1¾–2 lb	60–65 per lb
Saltines	4 crackers	1½ lb	150–160 per lb
Soda	2 crackers	1½–2 lb	65 per lb
Muffins	1 muffin	4½ doz	
Batter, ready to bake		5 lb	
Mix		3½ lb	
Pancakes	3½ oz	7 qt batter	2 4-inch cakes
Mix		6 lb	
Rolls			
Breakfast, 3 oz	1 roll	4½ doz	
Dinner, 1½ oz	1 roll	4½ doz	
Frozen dough		10 lb	
Mix		5 lb	
Toast			
French	2 slices	7 lb bread	
Buttered or cinnamon	2 slices	7 lb bread	
Waffles	3 oz	6 qt batter	1 waffle

[a] Abbreviations used: AP, as purchased; EP, edible portion

TABLE 1.1 *continued*

Food	*Serving portion*	*Amount for 50 portions*	*Miscellaneous information*
CEREALS			
Cooked cereal	⅔ cup	2 lb	2 gal cooked
Hominy grits	⅔ cup	2 lb	2 gal cooked
Cold cereal, flakes, crisp	1 oz (½–¾ cup)	3 lb	
Rice	½ cup	3–4 lb	6–8 qt cooked
See also Pasta			
DAIRY PRODUCTS			
Butter or margarine			
For sandwiches		1 lb	To butter 100 slices
For table	1–2 pats	1–1½ lb	
For vegetables	½–1 tsp	4–8 oz	
Cheese, cheddar, Monterey Jack, Swiss, provolone	1–1½ oz	3–5 lb	For sandwich or with cold cuts
Sandwich slices	1 oz	3¼ lb	
Cottage	2 oz (No. 20 dipper)	6½ lb	For salad or side dish
Cream	½ oz	2 lb	For salad or garnish
Dessert (cream, blue, Camembert)	1 oz	3 lb	
Cream			
Coffee		1–1½ qt	
Whipping	2 Tbsp	1½ pt	1½ qt whipped
Ice cream or sherbet, bulk	No. 12 dipper	2½ gal	Dish or sundae
	No. 16 dipper	1½ gal	With cake or cookie
	No. 20 dipper	1¼ gal	For à la mode
Milk			
Fluid	8 oz (1 cup)	3 gal	
Nonfat dry	8 oz (1 cup)	3 lb	3.5 oz (1⅓ cups) dry milk per qt of water. Volume may vary with brand.
Nondairy creamer	1 tsp	3 oz	
Sherbet			See Ice cream
Sour cream	1 oz (2 Tbsp)	3 lb	For baked potato
	1 tsp	8 oz	For garnish
Whipped topping mix			
Dry	2 Tbsp	5 oz	
Frozen	2 Tbsp	18 oz (1½ qt)	
Liquid	2 Tbsp	1½ pt	1½ qt whipped
Yogurt	8 oz (1 cup)	25 lb	
DESSERTS			
Cakes			
Angel food	1 oz	3–4 10-inch cakes	12–14 cuts per cake
Pound or loaf, 5 × 9 inches	3 oz	4 loaves	
Sheet, 12 × 18 × 2 inches Batter, ready to bake	3 × 2¼ inches	2 pans 4–5 lb each	Cut 4 × 8
Sheet, 18 × 26 × 2 inches Batter, ready to bake	3 × 2½ inches	1 pan 8–10 lb	Cut 6 × 10
Cake mixes			
Angel food		4 lb	
Chocolate, white, yellow		5 lb	

continues

TABLE 1.1 *continued*

Food	*Serving portion*	*Amount for 50 portions*	*Miscellaneous information*
Pies, 8 inch	⅙ pie	8 pies	Cut 6 pieces per pie
Filling			
Chiffon	3 cups per pie	6 qt	
Cream or custard	3 cups per pie	6 qt	
Fruit	3 cups (1 lb 8 oz) per pie	6 qt (10–12 lb)	
Meringue	4 oz per pie	2 lb	
Pastry			
1 crust	5 oz per pie	2 lb 8 oz	
2 crust	9 oz per pie	4 lb 8 oz	
Pies, 9 inch	⅛ pie	7 pies	Cut 8 pieces per pie
Filling			
Chiffon	3¾ cups per pie	6–7 qt	
Cream or custard	3¾ cups per pie	6–7 qt	
Fruit	3¾ –4 cups (1 lb 14 oz)	6–7 qt (10–12 lb)	
Meringue	5–6 oz per pie	2–2¼ lb	
Pastry			
1 crust	9 oz per pie	4 lb	
2 crust	16 oz per pie	7 lb	
Puddings	½ cup (4 oz)	6¼ qt	No. 10 dipper
Toppings, sauce	2–3 Tbsp	2–3 qt	
EGGS			
Eggs			
In shell	1 egg	4½ doz	
Fresh or frozen, whole	1 egg	5 lb (2½ qt)	
FISH AND SHELLFISH			
Fish			
Fillets and steaks, 4 per lb	3 oz	14–16 lb	1 lb AP = 0.70 lb cooked fish
Whole, dressed	3 oz	40 lb	1 lb AP = 0.27 lb cooked fish
Oysters, shucked	3–4 oz	1½–2 gal	1 lb AP = 0.38 lb cooked oysters
Scallops, frozen, to fry	3 oz	10–12 lb	
Shrimp			
Raw, in shell	2 oz	12½ lb	1 lb AP = 0.54 lb cooked shrimp
	3 oz	18–20 lb	
Raw, peeled and cleaned	3 oz	16 lb	1 lb peeled = 0.62 lb cooked shrimp
Cooked, peeled and cleaned	3 oz	10 lb	1 lb AP = 1.00 lb cooked shrimp
FRUITS			
Canned			
For pies, see Desserts			
For salad or dessert	3–4 oz (½ cup)	2–2½ No. 10 cans	For fruits such as peach or pear halves and sliced pineapple, depends on count per can

TABLE 1.1 *continued*

Food	*Serving portion*	*Amount for 50 portions*	*Miscellaneous information*
Fresh			
Apples	1 apple	½ box	Size 113
8 8-inch pies	⅙ pie	14–16 lb AP	1 lb AP = 0.91 lb ready to cook or serve raw with peels; 0.78 lb pared, cooked
7 9-inch pies	⅛ pie	16 lb AP	
Salad or dessert	3–3½ oz	15 lb AP	
Apricots	2	9 lb AP	Medium size 12 per lb
Avocado	½	25 avocados	Medium size 2 per lb
Salad	3 slices	12 avocados	1 lb AP = 0.67 lb ready to serve raw
Bananas	1	16 lb AP	Small, 5–6 inch 1 lb AP = 0.65 lb ready to serve raw
Salad	3 oz	10 lb AP	Medium 7–8 inch, 3 per lb
Blueberries	4 oz	12–14 lb AP	1 lb AP = 0.96 lb ready to serve raw
Cherries, sweet	3 oz	10 lb AP	1 lb AP = 0.98 lb ready to serve with pits; 0.84 lb pitted
Cranberries, for sauce	¼ cup	4 lb AP	1 lb AP = 0.95 lb ready to cook
Fruit cup (mixed fruits)	3 oz (⅓ cup)	9 lb (6 qt)	
Grapefruit	½	25 fruit	64 to 80 size
Salad	5 sections	21 fruit	12 sections per fruit 1 lb AP = 0.52 lb ready to serve raw
Grapes, seedless	4 oz	12–15 lb AP	1 lb AP = 0.97 lb ready to serve raw
With seeds			1 lb AP = 0.89 lb raw seeded
Kiwi	1 slice, as garnish	6–8 fruit	7–8 slices per fruit
Lemons			
For tea or fish	⅙ lemon	8–10 lemons	Medium, size 165
For lemonade	8-oz glass	3 doz	Medium, size 165
Limes			
Garnish	1 wedge	12 limes	4 wedges per lime
Limeade	8-oz glass	4½ doz	
Mangoes, cubed or sliced	½ cup	12½ lb AP	1 lb AP = 0.69 lb ready to serve raw
Melon			
Cantaloupe	½ melon	25 melons	
Fruit cup		5 melons	1 lb AP = 0.52 lb ready to serve raw
Salad slices		6 melons	
Casaba, honeydew, or persian	½ melon	7 melons	1 lb AP = 0.46 lb ready to serve raw
Watermelon	12–16 oz	38–50 lb AP	1 lb AP = 0.57 lb fruit without rind
Nectarines	1 nectarine (5 oz)	15–16 lb AP	1 lb AP = 0.91 lb ready to serve raw
Oranges	1 orange	½ box	Size 113
Juice	4 oz (½ cup)	6¼ qt	16–18 doz size 113
Sections	5 sections	18 oranges	Size 150; 1 lb AP = 0.40 lb ready to serve, without membrane

continues

TABLE 1.1 *continued*

Food	Serving portion	Amount for 50 portions	Miscellaneous information
Peaches	1 peach (4–5 oz)	12–15 lb AP	
Diced or sliced	½ cup	20 lb AP	1 lb AP = 0.76 lb ready to cook or serve raw
Pears	1 pear (5–6 oz)	17–19 lb AP	1 lb AP = 0.92 lb ready to cook or serve raw, unpared; 0.78 lb pared
Salad	3 slices	15–17 lb AP	8–10 slices per pear
Pineapple, cubed	½ cup	24 lb AP (6 pineapples)	1 lb AP = 0.54 lb ready to serve raw
Plums, Italian or purple	2 plums	12½ lb AP	Medium size, 8 per lb 1 lb AP = 0.94 lb ready to cook or serve raw
Rhubarb, 8 8-inch pies	⅙ pie	10–12 lb AP	1 lb AP = 0.86 lb ready to cook
7 9-inch pies	⅛ pie	12 lb AP	
Sauce	½ cup	14 lb AP	
Strawberries	4 oz	14 lb AP	1 lb AP = 0.88 lb ready to serve raw
Garnish	1 berry	1 qt AP	1 qt AP = about 1.32 lb ready to serve raw
Shortcake	¾ cup	8–9 qt AP	
Sundaes	½–¾ cup	6–8 qt AP	
Strawberries, frozen			
For pies, see Desserts			
For salad or dessert	4 oz (½ cup)	13–15 lb	
For topping	1½ oz	5 lb	
JUICES			
Fruit or vegetable	4 oz (½ cup)	6¼ qt	
	6 oz (¾ cup)	9½ qt	
Canned	4 oz	4 46-oz cans	
	6 oz	7 46-oz cans	
Frozen	4 oz	4–5 12-oz cans	Dilute 1:3 parts water
		2 32-oz cans	Dilute 1:3 parts water
	6 oz	7 12-oz cans	Dilute 1:3 parts water
		3 32-oz cans	Dilute 1:3 parts water
MEAT			
Beef			
Brisket, corned, boneless	3 oz EP	25–30 lb AP	1 lb AP = 0.42 lb cooked lean meat
Brisket, fresh, boneless	3 oz EP	25–30 lb AP	1 lb AP = 0.46 lb cooked lean meat
Cubed, 1 inch, for stew	3 oz EP	12–15 lb AP	1 lb AP = 0.56 lb cooked lean meat
Ground (73% lean)	3 oz EP	13–15 lb AP	1 lb AP = 0.68 lb cooked meat
Lean (80% lean)	3 oz EP	11–13 lb AP	1 lb AP = 0.77 lb cooked meat
Extra lean (85% lean)	3 oz EP	11–12 lb AP	1 lb AP = 0.80 lb cooked meat
Liver	3½ oz EP	16 lb AP	1 lb AP = 0.70 lb cooked liver
Roast			
Chuck, pot roast, boneless	3 oz EP	18 lb AP	1 lb AP = 0.70 lb lean cooked meat
With bone	3 oz EP	20–22 lb AP	1 lb AP = 0.45 lb cooked lean meat
Rib, standing	6 oz EP	45–50 lb AP	Bone in, oven prepared
Ribeye	3 oz EP	13–15 lb AP	1 lb AP = 0.73 lb lean cooked meat

TABLE 1.1 *continued*

Food	*Serving portion*	*Amount for 50 portions*	*Miscellaneous information*
Roasts, continued			
Round, bottom boneless	3 oz EP	15–18 lb AP	1 lb AP = 0.70 lb cooked lean meat
Inside, boneless	3 oz EP	15–18 lb AP	1 lb AP = 0.70 lb cooked meat
Rump, boneless	3 oz EP	16–18 lb AP	1 lb AP = 0.62 lb cooked lean meat
Sirloin, boneless, trimmed	3 oz EP	16–18 lb AP	1 lb AP = 0.61 lb cooked lean meat
Short ribs, trimmed	3 oz EP	38–40 lb AP	1 lb AP = 0.25 lb cooked meat
Steaks			
Cubed, 4 per lb	3 oz EP	17 lb AP	
Flank, 4 per lb	3 oz EP	17 lb AP	1 lb AP = 0.67 lb cooked lean meat
Loin strip	8 oz AP	25 lb AP	Short cut, bone in
Round, boneless, 3 per lb	3½ oz EP	18–20 lb AP	1 lb AP = 0.59 lb cooked lean meat
Sirloin, boneless	3½ oz EP	14–16 lb AP	1 lb AP = 0.75 lb cooked lean meat
Tenderloin, trimmed	4 oz EP	14 lb AP	1 lb AP = 0.90 lb cooked lean meat
T-bone	8 oz AP 12 oz AP	25 lb AP 36–38 AP	
Lamb			
Chops, rib, 4 per lb	2 each	25 lb AP	1 lb AP = 0.46 lb cooked lean meat
Roast, leg, boneless	3 oz EP	15 lb AP	1 lb AP = 0.61 lb cooked lean meat
With bone	3 oz EP	22 lb AP	1 lb AP = 0.45 lb cooked lean meat
Pork, Fresh			
Chops, loin, with bone, 3 per lb	1 chop	17 lb AP	1 lb AP = 0.41 lb cooked lean meat
Cutlets, 3 or 4 per lb	3–3½ oz EP	12–15 lb AP	1 lb AP = 0.75 lb cooked meat
Ham, whole boneless	3 oz EP	18–20 lb AP	1 lb AP = 0.53 lb cooked lean meat
With bone	3 oz EP	20–22 lb AP	1 lb AP = 0.46 lb cooked lean meat
Shoulder, Boston butt, boneless	3 oz EP	18–20 lb AP	1 lb AP = 0.54 lb cooked lean meat
With bone	3 oz EP	19–21 lb AP	1 lb AP = 0.50 lb cooked lean meat
Shoulder, picnic, boneless	3 oz EP	20–22 lb AP	1 lb AP = 0.46 lb cooked lean meat
With bone	3 oz EP	25 lb AP	1 lb AP = 0.38 lb cooked lean meat

continues

TABLE 1.1 *continued*

Food	*Serving portion*	*Amount for 50 portions*	*Miscellaneous information*
Roast, loin, boneless	3 oz EP	18–20 lb AP	1 lb AP = 0.54 lb cooked lean meat
With bone	3 oz EP	22–24 lb AP	1 lb AP = 0.41 lb cooked lean meat
Sausage, bulk	2-oz patty	12½–15 lb AP	1 lb AP = 0.47 lb cooked lean meat
Links, 12–16 per lb	2 links	7–8 lb AP	1 lb AP = 0.47 lb cooked lean meat
Spareribs	8–12 oz AP	25–40 lb AP	1 lb AP = 0.39 lb cooked meat
Pork, Cured			
Bacon, sliced			
Hotel pack	2 slices	4–5 lb	24 slices per lb
Sliced	2 slices	5–6 lb	17–20 slices per lb
Canadian	2 slices (2 oz)	10 lb	16 slices per lb
Ham, boneless	3 oz EP	15 lb AP	1 lb AP = 0.63 lb cooked lean meat
With bone	3 oz EP	18–20 lb AP	1 lb AP = 0.53 lb cooked lean meat
Fully cooked, ready to eat	3 oz EP	15 lb AP	
Pullman, canned	3 oz EP	12–15 lb AP	1 lb AP = 0.64 lb cooked lean meat
Shoulder, Boston butt, boneless	3 oz EP	16 lb AP	1 lb AP = 0.60 lb cooked lean meat
Shoulder, picnic, boneless	3 oz EP	18 lb AP	1 lb AP = 0.53 lb cooked lean meat
Variety and Luncheon Meats			
Braunschweiger	2 oz	7 lb	
Frankfurters			
8 per lb	2 franks	12½ lb	
10 per lb	2 franks	10 lb	
Knockwurst	3 oz	10 lb	
Sliced luncheon meat	1 oz	3¼ lb	16 slices per lb
Veal			
Cubed, 1-inch, for stew	2 oz EP	12–15 lb AP	1 lb AP = 0.65 lb cooked lean meat
Cutlets, 3 or 4 per lb	3–3½ oz EP	12½–15 lb AP	1 lb AP = 0.80 lb cooked lean meat
Ground	3–4 oz EP	15–18 lb AP	1 lb AP = 0.73 lb cooked lean meat
Roast, leg, boneless	3 oz EP	15–18 lb AP	1 lb AP = 0.61 lb cooked lean meat
Shoulder, boneless	3 oz EP	18 lb AP	1 lb AP = 0.59 lb cooked lean meat

TABLE 1.1 *continued*

Food	*Serving portion*	*Amount for 50 portions*	*Miscellaneous information*
PASTA			
Macaroni, noodles, and spaghetti	4 oz	4½–5 lb dry	12 lb cooked
In casseroles	2 oz	2–3 lb dry	6–7 lb cooked
POULTRY			
Chicken			
Fryer parts			
½ breast (without back)	5 oz AP	15–16 lb AP	1 lb AP = 0.66 lb cooked chicken
1 drumstick and thigh	6 oz AP	19–20 lb AP	
1 drumstick	3 oz AP	10 lb AP	1 lb AP = 0.49 lb cooked chicken
1 thigh	3 oz AP	10–11 lb AP	1 lb AP = 0.50 lb cooked chicken
2 wings	5 oz AP	15 lb AP	1 lb AP = 0.34 lb cooked chicken
Whole	¼ fryer	13 fryers	3½ lb each
	½ fryer	25 fryers	2–3 lb each
Whole, for stewing	3 oz cooked chicken without bone	26–28 lb AP	1 lb AP = 0.36 lb cooked chicken, not using neck and giblets; 0.41 lb using neck meat and giblets
Cooked, diced	2 oz	6 lb 4 oz	
Turkey, dressed, whole for roasting	3 oz EP (slices)	50 lb AP	1 lb AP = 0.53 lb cooked turkey with skin, without neck and giblets; without skin 0.47 lb
Boneless roll, raw	3–4 oz EP	16–18 lb AP	1 lb AP = 0.66 lb cooked turkey meat
Boneless roll, cooked	3–4 oz EP	12–15 lb AP	1 lb AP = 0.92 lb cooked turkey meat
Breasts, whole, raw	3 oz EP	19 lb AP	1 lb AP = 0.64 lb turkey meat with skin; 0.57 lb without skin
Leg quarters	3 oz EP	19 lb AP	1 lb AP = 0.53 lb cooked turkey; without skin 0.48 lb
Ground	3 oz EP	11–12 lb	1 lb AP = 0.85 lb cooked meat
Tenderloin (steaks)	4 oz	14–15 lb	1 lb AP = 0.90 lb cooked meat
Wings	3–4 oz EP	30 lb	1 lb AP = 0.32 lb cooked meat (without skin)
Turkey ham, cooked	1½ oz	5 lb	
Turkey, cooked, cubed	1½–2 oz	5–6 lb EP (18–20 lb AP)	3¾–4½ qt
Canned, see Chicken			
RELISHES			
Catsup	1 oz	½ No. 10 can	1 No. 10 can = about 12 cups
	1 oz	4 14-oz bottles	
Mustard, prepared	½ tsp	½ cup	
Olives, green, whole	3	2 qt	88–90 per qt
Ripe, whole or pitted	3	1½ qt	120–150 per qt
Pickles, dill, whole	1 pickle	2½ qt	
Dill or sweet, sliced	1 oz	2¼ qt	
Pickle relish	1 oz	2 qt	1 gal = about 58 oz drained

continues

TABLE 1.1 *continued*

Food	*Serving portion*	*Amount for 50 portions*	*Miscellaneous information*
SALADS AND SALAD DRESSINGS			
Salads			
Bulky vegetable	1 cup	3 gal	
Fish or meat	½ cup	6–7 qt	
Fruit	⅓ cup	4¼ qt	
Gelatin	½ cup	1 12 × 20 × 2-inch pan	24-oz pkg flavored gelatin, 1 gal liquid
Potato	½ cup	6–7 qt	
Dressings			
Mixed in salad			
French, thin	1 Tbsp	3–4 cups	
Mayonnaise	1–2 Tbsp	1 qt	
Self-service			
Thousand Island, Roquefort, or Ranch	1–2 Tbsp	1½–2 qt	
French	1 Tbsp	1–1½ qt	
SAUCES			
Gravy	3–4 Tbsp	3–4 qt	
Meat accompaniment	2 Tbsp	2 qt	
Pudding	2–3 Tbsp	2–3 qt	
Salsa	2–3 Tbsp	2–3 qt	Condiment for Mexican entrees
Vegetable	2–3 Tbsp	2–3 qt	
SOUPS			
Soup			
First course	½–1 cup (4–8 oz)	2–3¼ gal	
Main course	1 cup (8 oz)	3¼ gal	
Soup			
Concentrated	1 cup (8 oz)	5 46-oz cans	
Soup base, paste		10 oz	For 2½ gal soup
SUGARS, JELLIES, SWEETS, NUTS			
Candies, small	2 each	1 lb	
Honey	2 Tbsp	5 lb (2 qt)	
Jam or jelly	1 Tbsp	2–3 lb	
Marshmallows	3	1–1½ lb	
Nuts, mixed	1½ Tbsp	1–1½ lb	
Sugar, cubes	1–2 cubes	1½ lb	
Granulated	1½ tsp	12 oz	
Syrup	¼ cup	3 qt	
Toppings for dessert	2 Tbsp	1½–2 qt	
VEGETABLES			
Canned	2½ oz	2 No. 10 cans	Most vegetables yield 60–70 oz drained weight
Dried			
Dehydrated potatoes			
Diced or sliced	3–4 oz	2–2½ lb AP	
Instant for mashing	4 oz	2–2¼ lb AP	
Dried beans	4 oz	5–6 lb AP	
Split peas or lentils	4 oz	4 lb AP	
Fresh			
Alfalfa sprouts	2 Tbsp	1 lb	

TABLE 1.1 *continued*

Food	***Serving portion***	***Amount for 50 portions***	***Miscellaneous information***
Vegetables, fresh, continued			
Asparagus	3 oz	18–20 lb AP	1 lb AP = 0.53 lb ready to cook; 0.50 lb cooked
Beans, green or wax	3 oz	10–12 lb AP	1 lb AP = 0.88 lb ready to cook
Bean sprouts	2 Tbsp	12 oz	
Beets, topped	3 oz	12–14 lb AP	1 lb AP = 0.77 lb peeled; 0.73 lb cooked slices
Broccoli	3 oz	16–20 lb AP	1 lb AP = 0.81 lb ready to cook
Brussels sprouts	3 oz	12–14 lb AP	1 lb AP = 0.76 lb ready to cook
Cabbage			
Green	1 wedge or 3 oz shredded	12–14 lb AP	1 lb AP = 0.89 lb ready to cook or serve raw
Red, chopped or shredded	2 oz	10 lb AP	1 lb AP = 0.64 lb ready to cook or serve raw
Carrots, without tops	3 oz	14–16 lb AP	1 lb AP = 0.70 lb ready to cook or serve raw; 0.60 lb cooked
Strips for relish	3 strips, 4 × ½ inch	4–5 lb	
Cauliflower	3 oz	16–18 lb AP	1 lb AP = 0.62 lb ready to cook or serve raw; 0.61 lb cooked
Salad pieces	¼ cup	8 lb AP	1 medium head = about 6 cups (50–75 florets)
Celery, sliced	3 oz	12 lb AP	1 lb AP = 0.83 lb ready to cook or serve raw; 0.74 lb cooked
Sticks for relishes	4 sticks, 4 × ½ inch	4–5 lb AP	
Celery cabbage	2 oz	9 lb AP	1 lb AP = 0.93 lb ready to serve raw
Corn, on cob	1 ear	5 doz (25 lb with husks)	1 lb AP = 0.33 lb EP cooked
Cucumbers	1½ oz	5–6 lb AP	1 lb AP = 0.84 lb pared ready to serve raw
Eggplant	3 oz	12–15 lb AP	1 lb AP = 0.81 lb ready to cook
Endive, escarole	½ cup	8–10 lb AP	1 lb AP = 0.78 lb ready to serve
Lettuce			
Iceberg, wedges	⅙ head	8–10 heads	24 heads per crate
Broken, for salad	1 cup (2½ oz)	9½ lb AP	1 lb AP = 0.76 lb ready to serve
Garnish	1 leaf	4–5 lb AP	
Leaf, for garnish	1 leaf	3–4 lb AP	1 lb AP = 0.66 lb ready to serve
Bibb	2½ oz	9 lb	
Romaine, for salad	2½ oz	9 lb AP	1 lb AP = 0.64 lb ready to serve
Mushrooms, sliced	3 oz	12 lb AP	1 lb AP = 0.90 lb ready to serve raw or cook; 0.22 lb cooked
For sauce	1 oz	3–4 lb AP	
Onions			
Green, chopped for salad	¼ cup (with tops)	3½–4 lb AP	1 lb AP = 0.83 lb ready to serve raw with tops; 0.37 lb without tops
Mature	2 oz	7–8 lb AP	1 lb AP = 0.88 lb ready to serve raw or cook; 0.78 lb cooked
Whole, to bake	1 medium	12–15 lb AP	
Parsley, for garnish or seasoning		2 lb AP	1 lb AP = 0.92 lb ready to serve raw
Parsnips	3 oz	12–15 lb AP	1 lb AP = 0.83 lb ready to cook
Peppers, green, red, and yellow strips	3 strips	4–5 lb AP	1 lb AP = 0.80 lb ready to cook or serve raw; 0.73 lb cooked
Chopped for salads	½ oz	1–2 AP	

continues

TABLE 1.1 *continued*

Food	*Serving portion*	*Amount for 50 portions*	*Miscellaneous information*
Vegetables, fresh, continued			
Potatoes, sweet, or yams to bake	1 potato (4½–5 oz)	18–20 lb AP	1 lb AP = 0.61 lb baked, without skins
Candied	4 oz	20–25 lb AP	1 lb AP = 0.80 lb peeled, ready to cook
Mashed	4 oz	18 lb AP	
Potatoes, white, baked	1 potato	17–25 lb AP	1 lb AP = 0.74 lb baked potato without skins
Mashed	4 oz (½ cup)	15 lb AP	1 lb AP = 0.81 lb ready to cook pared
Steamed	4 oz (1 potato)	16–17 lb AP	
French fried	4–5 oz	16–20 lb AP	1 lb AP = 0.81 lb ready to cook
Radishes, without tops, for relishes	2 oz	6 lb AP	1 lb AP = 0.94 lb ready to serve raw
Salad greens	3 oz	10 lb	
Spinach	3 oz	12 lb AP	1 lb AP = 0.88 lb ready to cook or serve raw
For salad	1 oz	4–5 lb AP	
Squash, summer, yellow	3 oz	10 lb AP	1 lb AP = 0.95 lb ready to cook; 0.83 lb cooked
Zucchini	3 oz	10 lb AP	1 lb AP = 0.94 lb ready to cook; 0.86 lb cooked
Squash, winter, acorn	½ squash	20–25 lb AP	1 lb AP = 0.87 lb ready to cook in skin
Butternut	3 oz	12 lb AP	1 lb AP = 0.84 lb ready to cook pared
Hubbard, baked	2½-inch square	20–25 lb	
Mashed	3 oz	15 lb AP	1 lb AP = 0.64 lb ready to cook pared
Tomatoes	1 small	20 lb AP	
Sliced, salad	3 slices	15 lb AP	1 lb AP = 0.90 lb ready to cook or serve raw
Diced	½ cup	12–15 lb AP	1 lb AP = 0.75 lb peeled and seeded
Cherry, salad	1 oz	4 lb AP	1 lb AP = 0.97 lb stemmed
Turnips	3 oz	12–15 lb AP	1 lb AP = 0.79 lb ready to cook or serve raw; 0.78 lb cooked
Watercress	1½ oz	4–5 lb AP	1 lb AP = 0.92 lb ready to serve raw
Yams, see Potatoes, sweet			
Frozen			
Asparagus spears	3 oz	10 lb	
Beans, cut green or lima	3 oz	10 lb	
Broccoli	3 oz	10 lb	
Brussels sprouts	3 oz	10 lb	
Cauliflower	3 oz	10 lb	
Corn, whole kernel	3 oz	10 lb	
Peas	3 oz	10 lb	
Potatoes			
French fried	4 oz	12–13 lb	
Hashed brown	4 oz	12–13 lb	
Spinach	3 oz	10 lb	
MISCELLANEOUS			
Ice			
For water glasses	3–4 oz	10–12 lb	
For punch bowl		10 lb	
Potato chips	1 oz	3 lb	

TABLE 1.2 Approximate yield in the preparation of fresh fruits and vegetables (in lb)

Weight of ready to cook or ready to serve raw from 1 lb as purchased

Apples	0.78	Lettuce, head	0.76
Asparagus	0.53	Lettuce, leaf	0.66
Avocado	0.67	Lettuce, romaine	0.64
Bananas	0.65	Mangoes	0.69
Beans, green or wax	0.88	Mushrooms, trimmed	0.90
Beans, lima	0.44	Nectarines	0.91
Beets	0.77	Okra	0.87
Blueberries	0.96	Onions, mature	0.88
Broccoli	0.81	Orange sections	0.40
Brussels sprouts	0.76	Papaya	0.62
Cabbage, green	0.87	Parsnips	0.83
Cabbage, red	0.64	Peaches	0.76
Cantaloupe, served without rind	0.52	Pears, served pared	0.78
		Peas, green	0.38
Carrots	0.70	Peppers, green	0.80
Cauliflower	0.62	Pineapple	0.54
Celery	0.75	Plums	0.94
Chard, Swiss	0.92	Potatoes, sweet	0.80
Cherries, pitted	0.87	Potatoes, white	0.81
Chicory	0.89	Radishes, without tops	0.94
Collards, leaves	0.57	Rhubarb, without leaves	0.86
Collards, leaves and stems	0.74	Rutabagas	0.85
Cranberries	0.95	Spinach, partly trimmed	0.88
Cucumbers, pared	0.84	Squash, acorn or patty pan	0.87
Eggplant	0.81		
Endive, escarole	0.78	Squash, butternut	0.84
Ginger, fresh	0.77	Squash, Hubbard	0.64
Grapefruit sections	0.52	Squash, summer	0.95
Grapes, seedless	0.97	Squash, zucchini	0.94
Honeydew melon, served without rind	0.46	Strawberries	0.88
		Tomatoes	0.99
Kale	0.67	Turnips, without tops	0.79
Kiwi	0.85	Watermelon	0.57

Adapted from *Food Buying Guide for School Food Service,* U.S. Department of Agriculture PA 1257, Washington, D.C., 1980.

Notes

- **How to Use This Table** To determine the amount of fruits or vegetables to yield the amount stated in a recipe as EP or as ready to cook in Table 15.1, Timetable for Boiling or Steaming Fresh Vegetables (p. 631):
- Divide the weight of ready to cook or EP desired by the figure given in this table. For example, the recipe for Mashed Potatoes calls for 12 lb EP potatoes. To change the 12 lb EP to AP, divide 12 lb by 0.81 lb, the ready to cook weight from 1 lb AP.

  12 lb EP divided by 0.81 lb = 14.8 or 15 lb to purchase
- For conversion to pounds and ounces, refer to Table 1.27 (p. 54).

TABLE 1.3 Food weights and approximate equivalents in measure (pp. 22–31)

Food	*Weight*	*Approximate measure*
Alfalfa sprouts	1 lb	6 cups
Allspice, ground	1 oz	4½ Tbsp
Almonds, blanched, slivered, chopped	1 lb	3½ cups
Apples, canned, pie pack	1 lb	2 cups
Apples, fresh, AP[a]	1 lb	3 medium (113)
Apples, fresh, pared and sliced	1 lb	2¾ cups
Apples, pared and diced, 1½-inch cubes	1 lb	3 cups
Applesauce	1 lb	2 cups
Apricots, canned halves, without juice	1 lb	2 cups or 12–20 halves
Apricots, canned, pie pack	1 lb	2 cups
Apricots, dried, AP	1 lb	3 cups
Apricots, dried, cooked, without juice	1 lb	4½–5 cups
Apricots, fresh	1 lb	5–8 apricots (large)
Apricots, sliced	1 lb	3 cups
Asparagus, canned, cuts	1 lb	2½ cups
Asparagus, canned tips, drained	1 lb	16–20 stalks
Asparagus, fresh	1 lb	16–20 stalks
Avocado	1 lb	2 medium
Bacon bits	1 lb	3⅓ cups
Bacon, cooked	1 lb	85–95 slices
Bacon, uncooked	1 lb	14–25 slices
Bacon, uncooked, diced	1 lb	2¼ cups
Baking powder	1 oz	2⅓ Tbsp
Baking powder	1 lb	2⅓ cups
Baking soda	1 oz	2⅓ Tbsp
Baking soda	1 lb	2⅓ cups
Bananas, AP	1 lb	3 medium
Bananas, diced	1 lb	2½–3 cups
Bananas, mashed	1 lb	2 cups
Barbecue sauce	1 lb	2 cups
Barley, pearl	1 lb	2½ cups
Basil, sweet, dried	1 oz	1⅓ cups
Basil leaves, fresh (loosely packed)	1 oz	¾ cup, 40 medium leaves
Bay leaves	1 oz	2 cups
Beans, baked	1 lb	2 cups
Beans, garbanzo, canned	1 lb	2½ cups
Beans, Great Northern, dried, AP	1 lb	2½ cups
Beans, green, cut, cooked	1 lb	3 cups
Beans, green, cut, frozen	1 lb	3 cups
Beans, kidney, dried, AP	1 lb	2½ cups
Beans, kidney, dried, 1 lb AP, after cooking	2 lb 6 oz	6–7 cups
Beans, lima, dried, AP	1 lb	2½ cups
Beans, lima, dried, 1 lb AP, after cooking	2 lb 9 oz	6 cups

[a]AP denotes "as purchased," which refers to the status of the product before it is peeled, hulled, cored, or otherwise prepared for cooking.

TABLE 1.3 *continued*

Food	*Weight*	*Approximate measure*
Beans, lima, fresh, canned, or frozen	1 lb	3 cups
Beans, navy or black turtle, dried, AP	1 lb	2¼ cups
Beans, navy, dried, 1 lb AP, after cooking	2 lb 3 oz	5½–6 cups
Beans, pinto, dried, AP	1 lb	2½ cups
Bean sprouts, canned, drained	1 lb	1 qt
Bean sprouts, fresh	1 lb	2 qt
Beef, cooked, diced	1 lb	3 cups
Beef, dried, solid pack	1 lb	3¾ cups
Beef, ground, raw	1 lb	2 cups
Beef base (paste)	1 lb	2½ cups
Beets, cooked, diced, or sliced	1 lb	2½–3 cups
Beets, fresh, medium	1 lb	3–4 beets
Blackberries, fresh, frozen, IQF[b]	1 lb	3½ cups
Blackberries or boysenberries, pie pack	1 lb	2½ cups
Blackeyed peas, dried	1 lb	2¾ cups
Blueberries, canned	1 lb	2 cups
Blueberries, fresh, frozen, IQF	1 lb	2½ cups
Bran, all bran	1 lb	2 qt
Bran flakes	1 lb	3 qt
Bread, dry, broken	1 lb	8–9 cups
Bread, fresh	1 lb	8 oz dry crumbs
Bread, loaf	1 lb	16–18 slices, ½ inch each
Bread, sandwich	2 lb	36–40 slices, thin
Bread, soft, broken	1 lb	2½ qt
Bread crumbs, dry, ground	1 lb	4 cups (1 qt)
Bread crumbs, soft	1 lb	2 qt
Broccoli, florets	1 lb	4 cups
Broccoli, head	1 lb	1 medium
Brussels sprouts, AP	1 lb	1 qt
Butter	1 lb	2 cups
Buttermilk, dry	1 oz	¼ cup
Buttermilk, dry	1 lb	4 cups
Butterscotch chips	1 lb	2⅔ cups
Cabbage, raw, shredded	1 lb	1 qt lightly packed
Cabbage, AP, shredded, cooked	1 lb	1½ cups
Cake crumbs, soft	1 lb	6 cups
Cake mix	1 lb	4 cups
Cantaloupe	3 lb	1 melon, 6-inch diameter
Caraway seeds	1 oz	4 Tbsp
Cardamom, ground	1 oz	4½ Tbsp
Carrots, diced, cooked	1 lb	3 cups
Carrots, diced, raw	1 lb	3–3¼ cups
Carrots, fresh	1 lb	4–5 medium
Carrots, ground, raw, EP[c]	1 lb	3 cups

[b]IQF denotes “individually quick frozen.”
[c]EP denotes “edible portion,” or the status of the product after it has been prepared for cooking or for serving raw.

continues

TABLE 1.3 *continued*

Food	*Weight*	*Approximate measure*
Carrots, shredded	1 lb	4 cups
Carrots, sliced, frozen	1 lb	3½ cups
Catsup	1 lb	2 cups
Cauliflower, florets	1 lb	4 cups
Cauliflower, head	1 lb	1 medium
Cayenne pepper	1 oz	4½ Tbsp
Celery, chopped	1 lb	3 cups
Celery, diced	1 lb (1–2 bunches)	1 qt
Celery cabbage, shredded	1 lb	6 cups
Celery flakes, dried	1 oz	1⅓ cups
Celery salt	1 oz	2 Tbsp
Celery seed	1 oz	4 Tbsp
Cheese, cheddar or Swiss, shredded	1 lb	4 cups
Cheese, cottage	1 lb	2 cups
Cheese, cream	1 lb	2 cups
Cheese, loaf, slices	1 lb	16–20 slices
Cheese, mozzarella, shredded	1 lb	3½ cups
Cheese, parmesan or Romano, commercially grated	1 lb	3½ cups
Cheese, parmesan or Romano, freshly grated	1 lb	7–8 cups
Cherries, glacé, candied	1 lb	96 cherries or 2½ cups
Cherries, maraschino, drained	1 lb	50–60 cherries
Cherries, red, frozen	1 lb	2 cups
Cherries, red, pie pack, drained	1 lb	2½ cups
Cherries, Royal Anne, drained	1 lb	2½ cups
Cherries, sweet fresh	1 lb	45 cherries
Chervil	1 oz	2 cups
Chicken, cooked, cubed	1 lb	3 cups
Chicken, ready to cook	4–4½ lb	1 qt cooked, diced
Chicken base (paste)	1 lb	1¾ cups
Chili powder	1 oz	4 Tbsp
Chili sauce	1 lb	1⅓ cups
Chilis, green, diced	1 lb	2 cups
Chives, freeze-dried	1 oz	3½ cups
Chives, frozen	1 oz	⅓ cup
Chocolate, baking	1 lb	16 squares
Chocolate, grated	1 lb	3½ cups
Chocolate, melted	1 lb	2 cups (scant)
Chocolate chips	1 lb	2⅔ cups
Chocolate wafers	1 lb	4 cups crumbs
Cilantro, fresh	1 oz	¾ cup
Cilantro, dried	1 oz	1⅓ cups
Cinnamon, ground	1 oz	4 Tbsp
Cinnamon, ground	1 lb	4 cups
Cinnamon sticks	1 oz	10 pieces
Citron, dried, chopped	1 lb	2½ cups
Cloves, ground	1 oz	4 Tbsp
Cloves, whole	1 oz	5 Tbsp or 500 cloves

TABLE 1.3 *continued*

Food	*Weight*	*Approximate measure*
Cocoa	1 lb	4½ cups
Coconut, flaked or shredded	1 lb	4¾ cups
Coffee, ground coarse	1 lb	5–5½ cups
Coffee, instant	1 oz	½ cup
Coffee, whole beans	1 lb	6–6½ cups
Coriander seed, whole	1 oz	6 Tbsp
ground	1 oz	5 Tbsp
Corn, cream style, canned	1 lb	2 cups
Corn, whole kernel, canned, drained	1 lb	3 cups
Corn, whole kernel, frozen	1 lb	3 cups
Cornflake crumbs	1 lb	4½ cups
Cornflakes	1 lb	4 qt
Cornmeal, coarse	1 lb	3 cups
Cornmeal, 1 lb AP, dry, after cooking	6 lb	3 qt
Cornstarch	1 oz	3½ Tbsp
Cornstarch	1 lb	3½ cups
Corn syrup	1 lb	1½ cups
Couscous	1 lb	2¼ cups
Crab in shell	1 lb	½ cup cooked meat
Crabmeat, flaked	1 lb	3½ cups
Cracked wheat	1 lb	3½ cups
Cracker crumbs, medium fine	1 lb	5–6 cups
Crackers, 2⅝ × 2⅝ inch	1 lb	65 crackers
Crackers, graham	1 lb	60–65 crackers
Crackers, graham, crumbs	1 lb	4 cups
Crackers, saltines, 2 × 2 inch	1 lb	150–160 crackers
Cranberries, cooked	1 lb	1¾ cups
Cranberries, raw	1 lb	4 cups
Cranberry relish	1 lb	1¾ cups
Cranberry sauce, jellied	1 lb	2 cups
Cream of tartar	1 oz	3 Tbsp
Cream of Wheat or farina, quick, AP	1 lb	2⅔ cups
Cream of Wheat or farina, 1 lb AP, after cooking	8 lb	1 gal
Cream, sour	1 lb	2 cups
Cream, whipping	1 pt	1 qt whipped
Croutons	1 lb	2¼ qt
Cucumbers	1 lb	2–3 large
Cucumbers, diced, EP	1 lb	3 cups
Cucumbers, sliced	1 lb	50–60 slices
Cumin, ground	1 oz	4 Tbsp
Currants, dried	1 lb	3 cups
Curry powder	1 oz	4½ Tbsp
Dates, pitted	1 lb	2½ cups
Dill seed	1 oz	4½ Tbsp
Dill weed	1 oz	¾ cup
Eggplant	1 lb	8 slices, 4 × ½ inch
Eggplant	1 lb	1 qt diced
Eggs, dried, whites	1 lb	5 cups
Eggs, dried, whole	1 lb	5⅓ cups

continues

TABLE 1.3 *continued*

Food	*Weight*	*Approximate measure*
Eggs, dried, yolks	1 lb	5⅔ cups
Eggs, hard-cooked, chopped	1 lb	2⅔ cups
Eggs, hard-cooked, chopped	1 doz	3½ cups
Eggs, shelled, fresh or frozen, whole	1 lb (approximately 1¾ oz per egg)	2 cups (8–10 eggs)
Eggs, shelled, fresh or frozen, whites	1 lb (approximately 1–1¼ oz per white)	2 cups (16–18 eggs)
Eggs, shelled, fresh or frozen, yolks	1 lb (approximately ½–¾ oz per yolk)	2 cups (22–26 eggs)
Eggs, whole, in shell[d]	1 lb	8–10 large eggs
Fennel seed	1 oz	4 Tbsp
Figs, dry, cut fine	1 lb	2½ cups
Flour, all-purpose or bread	1 lb	4 cups
Flour, cake or pastry, unsifted	1 lb	3¾ cups
Flour, rye	1 lb	4 cups
Flour, whole wheat	1 lb	3¾–4 cups
Garlic, fresh	1 oz	6 large cloves
Garlic, fresh, minced	1 oz	3 Tbsp
Garlic powder	1 oz	3 Tbsp
Garlic salt	1 oz	2 Tbsp
Gelatin, granulated, flavored	1 lb	2¼ cups
Gelatin, granulated, unflavored	1 oz	3 Tbsp
Gelatin, granulated, unflavored	1 lb	3 cups
Ginger, candied, chopped	1 oz	2 Tbsp
Ginger, fresh, sliced	1 lb	3 cups
Ginger, ground	1 oz	4 Tbsp
Ginger, ground	1 lb	4 cups
Graham cracker crumbs	1 lb	4 cups
Grapefruit, medium	1 lb	1 grapefruit, 10-12 sections, ⅔ cup juice
Grapefruit sections	1 lb	2 cups
Grapes, cut, seeded, EP	1 lb	2¾ cups
Grapes, seedless, fresh	1 lb	3 cups
Grapes, on stem	1 lb	1 qt
Grits, hominy	1 lb	3 cups
Grits, hominy, 1 lb AP, after cooking	6½ lb	3¼ qt
Ham, cooked, diced	1 lb	3 cups
Ham, cooked, ground	1 lb	2½ cups
Hominy, canned	1 lb	3 cups
Hominy grits, see Grits		
Honey	1 lb	1⅓ cups
Horseradish, prepared	1 oz	2 Tbsp

[d]One case (30 doz) eggs weighs approximately 41–43 lb and yields approximately 35 lb liquid whole eggs.

TABLE 1.3 *continued*

Food	*Weight*	*Approximate measure*
Ice cream	4½–6 lb	1 gal
Jam, jelly	1 lb	1⅓–1½ cups
Kiwi	1 lb	5 kiwi
Lemon juice	1 lb	2 cups (8–10 lemons)
Lemon peel, dried	1 oz	4 Tbsp
Lemon peel, fresh	1 oz	4 Tbsp
Lemon peel, fresh	1 lemon	2 Tbsp
Lemons, size 165	1 lb	4–5 lemons yield ¾ cup juice
Lettuce, average head	2 lb	1 head
Lettuce, chopped or shredded	1 lb	6–8 cups
Lettuce, leaf	1 lb	25–30 salad garnishes
Limes, fresh	1 lb	5 limes, 15–20 thin slices yield, ⅞ cup juice
Macaroni, 1-inch pieces, dry	1 lb	4 cups
Macaroni, 1 lb AP, after cooking	3 lb	2–2¼ qt
Macaroni, cooked	1 lb	3 cups
Mace	1 oz	4½ Tbsp
Mango	1 lb	1 large, 2 small
Margarine	1 lb	2 cups
Margarine, whipped	1 lb	2⅔ cups
Marjoram leaves, dried	1 oz	1 cup
Marshmallows (1¼ inch)	1 lb	80–90
Marshmallows, miniature	1 lb	8 cups
(10 miniature = 1 regular)	1 oz	52
Mayonnaise	1 lb	2 cups (scant)
Meat, cooked, chopped	1 lb	2 cups
Milk, evaporated	1 lb	1¾ cups
Milk, fluid, whole	1 lb	2 cups
Milk, nonfat, dry	1 lb	6 cups
Milk, nonfat, dry	1 oz	6 Tbsp
Milk, sweetened, condensed	1 lb	1½ cups
Mincemeat	1 lb	2 cups
Molasses	1 lb	1⅓ cups
Monosodium glutamate	1 oz	2 Tbsp
Mushrooms, canned	1 lb	2 cups
Mushrooms, fresh, sliced	1 lb	5 cups raw (1¾ cups cooked)
Mustard, ground, dry	1 oz	5 Tbsp
Mustard, ground, dry	1 lb	5 cups
Mustard, prepared	1 oz	2 Tbsp
Mustard seed	1 oz	2½ Tbsp
Noodles, cooked	1 lb	2¾ cups
Noodles, 1 lb AP, after cooking	3 lb	2 qt
Nutmeats	1 lb	4 cups
Nutmeg, ground	1 oz	3½ Tbsp
Oats, rolled, quick, AP	1 lb	5⅓ cups
Oats, rolled, 1 lb AP, after cooking	2½ lb	4 qt
Oil, vegetable	1 lb	2–2⅛ cups
Olives, AP	1 lb	⅔ cup chopped
Olives, green, small size, drained	1 lb	160 olives

continues

TABLE 1.3 *continued*

Food	*Weight*	*Approximate measure*
Olives, green, stuffed	1 lb	2½ cups
Olives, ripe, sliced	1 lb	3⅓ cups
Olives, ripe, small size, drained	1 lb	140 small, 110 medium, 90 large olives
Onions, dehydrated	1 lb	8 lb raw (equivalent)
Onions, dehydrated, chopped	1 oz	5 Tbsp
Onions, dehydrated, chopped	1 lb	5–6 cups
Onions, fresh, chopped	1 lb	2½–3 cups
Onions, green, sliced	1 lb	2½–3 cups
Onions, mature, AP	1 lb	4–5 medium
Onion powder	1 oz	3 Tbsp
Onion salt	1 oz	2½ Tbsp
Onion soup mix	1 oz	2½ Tbsp
Onion soup mix	1 lb	2⅔ cups
Orange juice, frozen	6 oz	3 cups reconstituted
Orange juice, frozen	32 oz	4 qt reconstituted
Orange peel, dried	1 oz	4 Tbsp
Orange peel, fresh	1 medium orange	3 Tbsp grated peel
Oranges, medium (size 113)	1 lb	3–4 oranges, unpeeled; 5 oranges, peeled; 10–11 sections each; yield, 1 cup juice
Oranges	1 lb	2 cups bite-size pieces
Oregano, ground	1 oz	5 Tbsp
Oregano, leaf	1 oz	¾ cup
Oysters, shucked	1 lb	2 cups
Paprika, ground	1 oz	4 Tbsp
Parsley, coarsely chopped	1 oz	¾ cup
Parsley flakes, dry	1 oz	1⅓ cups
Parsnips, AP	1 lb	4 medium
Pasta	1 lb	see p. 369
Peaches, canned, sliced, drained	1 lb	2 cups
Peaches, fresh, AP	1 lb	3 medium
Peaches, sliced, frozen	1 lb	2 cups
Peanut butter	1 lb	2 cups
Peanuts, chopped, no skins	1 lb	3 cups
Peanuts, shelled	1 lb	3¼ cups
Pears, canned, drained, diced	1 lb	2½ cups
Pears, canned, large halves, drained	1 lb 14 oz	1 qt (9 halves)
Pears, fresh AP	1 lb	3 medium
Peas, cooked, drained	1 lb	2¼ cups
Peas, dried, 1 lb after cooking	2½ lb	5½ cups
Peas, split, dried, AP	1 lb	2⅓ cups
Pecans, chopped	1 lb	4 cups
Pecans, shelled, pieces	1 lb	4 cups
Pepper, cayenne	1 oz	5 Tbsp
Pepper, ground, black or white	1 oz	4 Tbsp
Pepper, ground, black or white	1 lb	4 cups
Pepper, crushed, red	1 oz	6 Tbsp
Peppercorns	1 oz	6 Tbsp

TABLE 1.3 *continued*

Food	*Weight*	*Approximate measure*
Peppers, green	1 lb	2–3 medium
Peppers, green, chopped	1 lb	3 cups
Peppers, green, dried flakes	1 oz	¾ cup
Peppers, jalapeño	1 lb	16 medium
Pickle relish	1 lb	2 cups
Pickles, chopped	1 lb	3 cups
Pickles, halves, 3 inch	1 lb	3 cups or 36 halves
Pimento, chopped	1 lb	2 cups
Pineapple, canned, crushed	1 lb	2 cups
Pineapple, canned, slices, drained	1 lb	8–12 slices
Pineapple, canned, tidbits	1 lb	2 cups
Pineapple, fresh	2–4 lb	1 pineapple, 2–4 cups, cubed
Pineapple, frozen, chunks	1 lb	2 cups
Plums	1 lb	6 medium
Poppy seed	1 oz	3 Tbsp
Potato chips	1 lb	4–5 qt
Potato chips, crushed	1 lb	2 qt
Potatoes, dehydrated, diced	1 lb	5⅛ cups
Potatoes, dehydrated, flakes	1 lb	5 cups
Potatoes, dehydrated, granules	1 lb	2¼ cups
Potatoes, dehydrated, slices	1 lb	9⅔ cups
Potatoes, fresh, white, AP	1 lb	3 medium
Potatoes, fresh, white, cooked	1 lb	2½ cups
Potatoes, raw, white, cubed	1 lb	2⅔ cups
Potatoes, sweet	1 lb	3 medium
Potatoes, sweet, cooked	1 lb	2 cups
Poultry seasoning, ground	1 oz	6 Tbsp
Prunes, dried, size 30/40, AP	1 lb	2½ cups
Prunes, dried, 1 lb AP, after cooking	2 lb	3–4 cups
Prunes, pitted, cooked	1 lb	3¼ cups
Pudding mix, dry, instant	1 lb	2½ cups
Pudding mix, dry, regular	1 lb	2¼ cups
Pumpkin, cooked	1 lb	2 cups
Quinoa	1 lb	2¼ cups
Radishes, AP	1 lb	45–50
Raisins, AP	1 lb	3 cups
Raisins, 1 lb AP, after cooking	1 lb 12 oz	1 qt
Raisins, chopped	1 lb	2⅔ cups
Raspberries, fresh AP, or frozen IQF	1 lb	3 cups
Raspberries, with syrup	1 lb	2 cups
Red-hots	1 lb	2¼ cups
Rhubarb, raw, 1-inch pieces	1 lb	4 cups
Rhubarb, 1 lb EP, after cooking		2½ cups
Rice, brown, AP	1 lb	2½ cups
Rice, converted, AP	1 lb	2½ cups
Rice, cooked	1 lb	2¼ cups
Rice, 1 lb AP, after cooking	3½ lb	2 qt
Rice, precooked, AP	1 lb	4½ cups
Rice, regular, AP	1 lb	2⅓ cups
Rice, wild	1 lb	2⅔ cups
Rice, wild, 1 lb AP, after cooking	1 lb	5 cups

continues

TABLE 1.3 *continued*

Food	*Weight*	*Approximate measure*
Rice cereal, crisp	1 lb	4 qt
Rosemary leaves	1 oz	9 Tbsp
Rutabagas, raw, cubed, EP	1 lb	3⅓ cups
Sage, finely ground	1 oz	8 Tbsp (½ cup)
Sage, rubbed	1 oz	⅔ cup
Salad dressing, cooked	1 lb	2 cups
Salmon, canned	1 lb	2 cups
Salt	1 oz	1½ Tbsp
Salt	1 lb	1½ cups
Sauerkraut	1 lb	3 cups packed
Sausage, bulk, AP	1 lb	2 cups
Sausages, link, small	1 lb	16–17 links
Sesame seed	1 oz	3 Tbsp
Sherbet	6 lb	1 gal
Shortening, hydrogenated fat	1 lb	2¼ cups
Shrimp, cleaned, cooked, peeled	1 lb	3¼ cups
Soda, baking	1 oz	2⅓ Tbsp
Spaghetti, cooked	1 lb	2⅔ cups
Spaghetti, 1 lb AP, after cooking	3 lb	2 qt
Spinach, canned or frozen	1 lb	2 cups
Spinach, raw	1 lb	5 qt lightly packed
Spinach, raw, chopped	1 lb	3¼ qt
Spinach, 1 lb AP, after cooking	13 oz	2¾ cups
Squash, Hubbard, cooked	1 lb	2 cups
Squash, summer, fresh	1 lb	4 cups
Starch, waxy maize	1 oz	3 Tbsp
Strawberries, fresh or frozen, IQF	1 lb	3 cups
Strawberries, sliced, frozen, with syrup	1 lb	2 cups
Suet, ground	1 lb	3¾ cups
Sugar, brown, lightly packed	1 lb	3 cups
Sugar, brown, solid pack	1 lb	2 cups
Sugar, cubes	1 lb	96 cubes
Sugar, granulated	1 lb	2¼ cups
Sugar, granulated	1 oz	2¼ Tbsp
Sugar, powdered, unsifted	1 lb	3¼ cups
Sugar, powdered, XXXX sifted	1 lb	3¾ cups
Syrup, corn or maple	1 lb	1½ cups
Tapioca, quick cooking	1 lb	3 cups
Tapioca, 1 lb AP, after cooking		7½ cups
Tarragon, leaf	1 oz	1 cup
Tea, bulk	1 lb	6 cups
Tea, instant	1 oz	½ cup
Thyme, ground	1 oz	6 Tbsp
Thyme, leaves	1 oz	¾ cup
Tomatoes, canned	1 lb	2 cups
Tomatoes, fresh	1 lb	2–3 medium, 12 slices
Tomatoes, fresh, diced	1 lb	2¼ cups
Tomatoes, fresh plum	1 lb	6 medium
Tomato paste	1 lb	2 cups

TABLE 1.3 *continued*

Food	*Weight*	*Approximate measure*
Tortillas, corn, 8 inch	1 lb	16
Tortillas, flour, 8 inch	1 lb	12
Tortillas, flour, 10 inch	1 lb	9
Tuna, canned	1 lb	2 cups
Turkey, AP, dressed weight	14 lb	11–12 cups diced, cooked meat
Turmeric, ground	1 oz	4 Tbsp
Turnips, AP	1 lb	2–3
Vanilla and other extracts	1 oz	2 Tbsp
Vinegar	1 lb	2 cups
Walnuts, English, shelled	1 lb	4 cups
Water	1 lb	2 cups
Watercress, EP	1 oz	½ cup
Watermelon	1 lb	1-inch slice, 6-inch diameter
Wheat germ	1 lb	5⅓ cups
Whipped topping, liquid	1 lb	2 cups
Yeast, compressed	1 oz	1 pkg
Yeast, dry	¼ oz	1 envelope
Yeast, dry, regular or instant	1 oz	3 Tbsp + 1 tsp
Yeast, dry, regular or instant	1 lb	3⅓ cups
Yogurt	1 lb	2 cups
Zucchini, fresh, shredded	1 lb	3¼ cups

TABLE 1.4 Basic equivalents in measures and weights

Equivalents	*Abbreviations used in this book*[a]	
1 Tbsp = 3 tsp, in liquids ½ fl oz	bu	bushel
⅛ cup = 2 Tbsp, in liquids 1 fl oz	fl oz	fluid ounce
¼ cup = 4 Tbsp, in liquids 2 fl oz	gal	gallon
⅓ cup = 5 Tbsp + 1 tsp	g	gram
½ cup = 8 Tbsp, in liquids 4 fl oz	kg	kilogram
⅔ cup = 10 Tbsp + 2 tsp	L	liter
¾ cup = 12 Tbsp, in liquids 6 fl oz	lb	pound
1 cup = 16 Tbsp, in liquids 8 fl oz	mL	milliliter
1 pt = 2 cups, in liquids 16 fl oz	oz	ounce
1 qt = 2 pt = 4 cups	pk	peck
1 gal = 4 qt	pt	pint
1 lb = 16 oz	qt	quart
1 pk = 8 qt, approximately 12½ lb	Tbsp	tablespoon
1 bu = 4 pk, approximately 50 lb	tsp	teaspoon

METRIC

1 g = 0.035 oz
1 kg = 2.2 lb
1 oz = 28 g
1 lb = 454 g
1 mL = ⅕ tsp
1 L = 1.06 qt
1 cup = 240 mL
1 qt = 0.95 L
1 gal = 3.8 L

[a]Periods are usually not used in abbreviations for quantity recipes.

TABLE 1.5 Weight (1–16 oz) and approximate measure equivalents for commonly used foods (pp. 32–35)

Food item	*1 oz*	*2 oz*	*3 oz*	*4 oz*
Baking powder	2⅓ Tbsp	¼ cup + 1 tsp	⅓ cup + 2 Tbsp	½ cup + 1 Tbsp
Baking soda	2⅓ Tbsp	¼ cup + 1 tsp	⅓ cup + 2 Tbsp	½ cup + 1 Tbsp
Bread crumbs, dry	¼ cup	½ cup	¾ cup	1 cup
Butter or margarine	2 Tbsp	¼ cup	⅓ cup + 2 tsp	½ cup
Celery, chopped	¼ cup	½ cup	¾ cup	1 cup
Cornstarch	3½ Tbsp	⅓ cup + 2 Tbsp	⅔ cup	¾ cup + 2 Tbsp
Eggs, whole, whites or yolks, fresh or frozen	2 Tbsp	½ cup	⅓ cup + 2 tsp	½ cup
Flour, all-purpose, unsifted	¼ cup	½ cup	¾ cup	1 cup
Flour, cake, unsifted	¼ cup	½ cup	¾ cup + 3 Tbsp	¾ cup + 3 Tbsp
Milk, nonfat dry	⅓ cup	¾ cup	1 cup + 2 Tbsp	1½ cups
Nutmeats	¼ cup	½ cup	¾ cup	1 cup
Onion, chopped	3 Tbsp	⅓ cup + 2 tsp	½ cup + 1 Tbsp	¾ cup
Salt	1½ Tbsp	3 Tbsp	¼ cup + 1½ tsp	⅓ cup + 2 tsp
Shortening, hydrogenated fat	2 Tbsp + 1 tsp	¼ cup + 2 tsp	⅓ cup + 2 Tbsp	½ cup + 1 Tbsp
Sugar, brown, light pack	3 Tbsp	⅓ cup + 2 tsp	½ cup + 1 Tbsp	¾ cup
Sugar, granulated	2¼ Tbsp	¼ cup	¼ cup + 3 Tbsp	½ cup + 1 Tbsp
Sugar, powdered	3 Tbsp	⅓ cup + 2 tsp	½ cup + 1 tsp	¾ cup
Yeast, dry	3 Tbsp + 1 tsp	⅓ cup + 1 Tbsp	½ cup + 2 Tbsp	⅔ cup + 1 Tbsp

5 oz	6 oz	7 oz	8 oz
¾ cup	¾ cup + 2 Tbsp	1 cup + 1 tsp	1 cup + 3 Tbsp
¾ cup	¾ cup + 2 Tbsp	1 cup + 1 tsp	1 cup + 3 Tbsp
1¼ cups	1½ cups	1¾ cups	2 cups
½ cup + 2 Tbsp	¾ cup	¾ cup + 2 Tbsp	1 cup
1¼ cups	1½ cups	1¾ cups	2 cups
1 cup + 2 Tbsp	1¼ cups + 1 Tbsp	1½ cups + 1 Tbsp	1¾ cups
½ cup + 2 Tbsp	¾ cup	¾ cup + 2 Tbsp	1 cup
1¼ cups	1½ cups	1¾ cups	2 cups
1 cup + 3 Tbsp	1¼ cups + 3 Tbsp	1½ cups + 2 Tbsp	1¾ cups + 2 Tbsp
1¾ cups + 2 Tbsp	2¼ cups	2½ cups + 2 Tbsp	3 cups
1¼ cups	1½ cups	1¾ cups	2 cups
¾ cup + 3 Tbsp	1 cup + 2 Tbsp	1¼ cups + 1 Tbsp	1½ cups
⅓ cup + 2 Tbsp	½ cup + 1 Tbsp	⅔ cup	¾ cup
⅔ cup + 1 Tbsp	¾ cup + 2 Tbsp	1 cup	1 cup + 2 Tbsp
¾ cup + 3 Tbsp	1 cup + 2 Tbsp	1¼ cups + 1 Tbsp	1½ cups
½ cup + 3 Tbsp	¾ cup + 2 Tbsp	1 cup	1 cup + 2 Tbsp
¾ cup + 3 Tbsp	1 cup + 2 Tbsp	1¼ cups + 1 Tbsp	1½ cups
1 cup + 2 tsp	1¼ cups	1½ cups	1⅔ cups

continues

TABLE 1.5 *continued*

Food item	*9 oz*	*10 oz*	*11 oz*	*12 oz*
Baking powder	1¼ cups + 1 Tbsp	1½ cups	1½ cups + 2 Tbsp	1¾ cups
Baking soda	1¼ cups + 1 Tbsp	1½ cups	1½ cups + 2 Tbsp	1¾ cups
Bread crumbs, dry	2¼ cups	2½ cups	2¾ cups	3 cups
Butter or margarine	1 cup + 2 Tbsp	1¼ cups	1⅓ cups + 1 Tbsp	1½ cups
Celery, chopped	2¼ cups	2½ cups	2¾ cups	3 cups
Cornstarch	2 cups	2 cups + 3 Tbsp	2⅓ cups + 2 Tbsp	2½ cups + 2 Tbsp
Eggs, whole, whites or yolks, fresh or frozen	1 cup + 2 Tbsp	1¼ cups	1⅓ cups + 1 Tbsp	1½ cups
Flour, all-purpose, unsifted	2¼ cups	2½ cups	2¾ cups	3 cups
Flour, cake, unsifted	2 cups + 2 Tbsp	2¼ cups + 2 Tbsp	2½ cups + 1 Tbsp	2¾ cups
Milk, nonfat dry	3¼ cups + 2 Tbsp	3¾ cups	4 cups + 2 Tbsp	4½ cups
Nutmeats	2¼ cups	2½ cups	2¾ cups	3 cups
Onion, chopped	1⅔ cups	1¾ cups + 2 Tbsp	2 cups + 1 Tbsp	2¼ cups
Salt	¾ cup + 2 Tbsp	¾ cup + 3 Tbsp	1 cup + 1 Tbsp	1 cup + 2 Tbsp
Shortening, hydro-genated fat	1¼ cups	1⅓ cups + 1 Tbsp	1½ cups + 1 Tbsp	1⅔ cups
Sugar, brown, light pack	1⅔ cups	1¾ cups + 2 Tbsp	2 cups + 1 Tbsp	2¼ cups
Sugar, granulated	1¼ cups	1¼ cups + 3 Tbsp	1½ cups + 1 Tbsp	1½ cups + 3 Tbsp
Sugar, powdered	1⅔ cups	1¾ cups + 2 Tbsp	2 cups + 1 Tbsp	2¼ cups
Yeast, dry	1¾ cups + 2 Tbsp	2 cups + 1 Tbsp	2¼ cups + 1 Tbsp	2½ cups

13 oz	*14 oz*	*15 oz*	*16 oz*
1¾ cups + 2 Tbsp	2 cups + 1 Tbsp	2 cups + 3 Tbsp	2⅓ cups
1¾ cups + 2 Tbsp	2 cups + 1 Tbsp	2 cups + 3 Tbsp	2⅓ cups
3¼ cups	3½ cups	3¾ cups	4 cups
1½ cups + 2 Tbsp	1¾ cups	1¾ cups + 2 Tbsp	2 cups
3¼ cups	3½ cups	3¾ cups	4 cups
2¾ cups + 2 Tbsp	3 cups + 1 Tbsp	3¼ cups + 1½ tsp	3½ cups
1½ cups + 2 Tbsp	1¾ cups	1¾ cups + 2 Tbsp	2 cups
3¼ cups	3½ cups	3¾ cups	4 cups
3 cups + 1 Tbsp	3¼ cups + 1 Tbsp	3½ cups	3¾ cups
4¾ cups + 2 Tbsp	5¼ cups	5½ cups + 2 Tbsp	6 cups
3¼ cups	3½ cups	3¾ cups	4 cups
2⅓ cups + 2 Tbsp	2½ cups + 2 Tbsp	2¾ cups + 1 Tbsp	3 cups
1¼ cups	1¼ cups + 1 Tbsp	1⅓ cups + 1 Tbsp	1½ cups
1¾ cups + 1 Tbsp	2 cups	2 cups + 2 Tbsp	2¼ cups
2⅓ cups + 2 Tbsp	2½ cups + 2 Tbsp	2¾ cups + 1 Tbsp	3 cups
1¾ cups + 1 Tbsp	2 cups	2 cups + 2 Tbsp	2¼ cups
2⅓ cups + 2 Tbsp	2½ cups + 2 Tbsp	2¾ cups + 1 Tbsp	3 cups
2⅔ cups + 1 Tbsp	2¾ cups + 3 Tbsp	3 cups + 2 Tbsp	3⅓ cups

TABLE 1.6 Metric equivalents for weight, measure, and temperature

Weight		*Measure*		*Temperature*	
U.S.	*Metric*[a]	*U.S.*	*Metric*[b]	*°F*	*°C*[c]
1 oz	28 g	1 tsp	5 mL	32	0
1½ oz	43 g	1 Tbsp	15 mL	100	38
2 oz	57 g	¼ cup (4 Tbsp)	60 mL	150	65
2½ oz	70 g	⅓ cup (5⅓ Tbsp)	80 mL	200	95
3 oz	85 g	½ cup (8 Tbsp)	120 mL	250	121
3½ oz	100 g	⅔ cup (10⅔ Tbsp)	160 mL	275	135
4 oz (¼ lb)	114 g	¾ cup (12 Tbsp)	180 mL	300	150
5 oz	142 g	1 cup (16 Tbsp)	240 mL	325	165
6 oz	170 g	2 cups (1 pint)	480 mL	350	175
7 oz	198 g	4 cups (1 qt)	0.95 L	375	190
8 oz (½ lb)	227 g	2 qt (½ gal)	1.89 L	400	205
9 oz	255 g	4 qt (1 gal)	3.79 L	425	220
10 oz	284 g			450	230
11 oz	312 g			475	245
12 oz (¾ lb)	340 g			500	260
13 oz	369 g				
14 oz	397 g				
15 oz	425 g				
1 lb (16 oz)	454 g				
2 lb	908 g				
2 lb 4 oz	1.02 kg				

[a] Basic formula used to calculate metric weights: 1 oz = 28.35 g. Resulting figures were rounded to nearest gram and to two decimal places for kilograms. Abbreviations used: oz = ounce; lb = pound; g = gram; kg = kilogram. To change grams to kilograms, move decimal three places to left: e.g., 28 g = 0.028 kg.

[b] Basic formulas used to calculate metric volume: 1 Tbsp = 14.8 mL, rounded to 15 mL; 1 cup = 237 mL, rounded to 240 mL; 1 qt = 0.95 L (4 × 237 ÷ 1000). Abbreviations used: tsp = teaspoon; Tbsp = tablespoon; pt = pint; qt = quart; gal = gallon; mL = milliliter; L = liter.

[c] To convert from °F to °C, the following formula is used: (°F − 32) × 5⁄9 = °C.

TABLE 1.7 Convection oven baking times and temperatures

Product	*Oven temperature* °F	*Oven temperature* °C	*Approximate baking time*
Meats			
Steamship round (50 lb, medium)	250–275	120–135	8–9 hr
Rolled beef roast (12–15 lb)	275	135	2½ hr
Standing rib, choice (20 lb, trimmed, rare)	250–300	120–150	2¾ hr
Lasagna	250–275	130	90 min
Hot dogs, 10 per lb (18 × 26-inch pan)	325	165	10–15 min
Baked stuffed pork chops	375	190	20–30 min
Bacon (on racks in 18× 26-inch pans)	400	205	5–7 min
Poultry			
Chicken breast and thigh	350	175	40 min
Chicken (2½ lb quartered)	350	175	30 min
Turkey, rolled (18-lb rolls)	310	155	3¾ hr
Turkey, whole (16–20 lb)	275–300	135–150	4–5 hr
Fish and Shellfish			
Halibut steaks, codfish (frozen 5 oz)	350	175	20 min
Lobster tails (frozen)	425	220	9 min
Potatoes			
Baked potatoes (120 count)	400	205	50 min
Oven roasted potatoes (sliced or diced)	325	165	10 min
Baked Goods			
Frozen pies (22 oz)	400	205	30–35 min
Frozen pies (46 oz)	350	175	45–50 min
Fresh apple pie (20 oz)	350–375	175–190	25–30 min
Pumpkin pies	300	150	30–35 min
Fruit cobbler	300	150	30 min
Apple turnovers	350	175	15 min
Corn bread	335	170	20–25 min
Bread (24 1-lb loaves)	350	175	30 min
French bread	375	190	18–20 min
Yeast rolls	350	175	25 min
Croissant	325	165	15–18 min
Danish	335	170	12 min
Sheet cakes (5 lb batter per pan)	325	165	20–25 min
Chocolate cake	335	170	20 min
Fruit cakes	275	135	70 min
Brownies	325	165	20 min
Cookies	325–350	165–175	10–15 min
Cream puffs	350	175	20–25 min

Notes

- Actual times and temperatures may vary from those shown. They are affected by weight of load, temperature of the product, recipe, and type of pan.
- For menu items not listed, use recommended time and temperature for conventional oven but reduce the temperature setting by 25°–50°F and reduce the total bake/roast time by approximately 10–15 percent.

TABLE 1.8 Deep-fat frying temperatures

Type of product	*Preparation*[a]	*Temperature*[b] *°F*	*°C*	*Frying time*[c] *(minutes)*
BREADS				
Doughnuts	See p. 132	375	190	3–5
French toast	See p. 133	360	180	3–4
Fritters	See p. 134	375	190	2–5
Sandwiches	Batter	350–375	175–190	3–4
FISH				
Fillets or pieces	Egg and crumb or batter	360–375	180–190	4–6
Oysters	Egg and crumb	375	190	2–4
Scallops	Egg and crumb	360–375	180–190	3–4
Shrimp	Batter or egg and crumb	360–375	180–190	3–5
FRUIT				
Bananas	Batter	375	190	1–3
POULTRY				
Chicken, pieces	Light coating or egg and crumb			
Fryers (1½–2 lb)		350	175	10–12
Fryers (2–2½ lb)		350	175	12–15
Chicken, half	Light coating or egg and crumb			
Fryers (1½–2 lb)		350	175	12–15
Turkey or chicken cutlets	Egg and crumb	325–350	165–175	5–8
VEGETABLES				
Cauliflower, precooked	See p. 654	370	185	3–5
Eggplant	See p. 654	370	185	5–7
Mushrooms	See p. 654	370	185	4–6
Onion Rings	Batter	350	175	3–4
Potatoes, ½-inch strips	See p. 659			
Complete fry		365	182	6–8
Blanching		360	180	3–5
Browning		375	190	2–3
Frozen, fat blanched		375	190	2–3
Zucchini	See p. 654	370	185	4–6

[a] See Table 1.9 for light coating, egg and crumb, and batter.

[b] If food is frozen, use lower temperatures listed and allow additional cooking time. At high altitudes, the lower boiling point of water in foods requires lowering of temperatures for deep-fat frying.

[c] The exact frying time will vary with the equipment used, size and temperature of the food pieces, and the amount of food placed in fryer at one time. If fryer is overloaded, foods may become grease-soaked.

Note

- Use fat with a high smoking temperature. Filter fat regularly, at least daily or more often if fryer is in constant use. The breakdown of fat may be caused by using the fat for too long a period, cooking food at too high a temperature, failing to filter the fat regularly, or inadvertently getting salt into the fryer when salting food.

TABLE 1.9 Coatings for deep-fat fried foods

Ingredient	*Light coating*[d]	*Egg and crumb*[e]	*Batter*[f]
Egg[a]		3	6
Milk[b]	1 cup	1 cup	2 cups
Flour, all-purpose or whole wheat	1 lb	8 oz (optional)	12 oz
Salt[c]	2 tsp	1 tsp	2 tsp
Bread crumbs, fine		12 oz	
Baking powder			2 tsp
Shortening, melted, or vegetable oil			3 Tbsp
Seasonings		As desired	

[a] Cholesterol can be lowered by substituting egg whites for all or part of the eggs.
[b] Water may be substituted for milk, except in batter.
[c] Seasoned salt (p. 591) may be substituted.
[d] Dip prepared food in milk. Dredge with seasoned flour.
[e] Dip prepared food in flour (may omit), then in mixture of beaten egg and milk. Drain. Roll in crumbs to cover (see Figure 10.3).
[f] Combine flour, salt, and baking powder. Add milk, beaten eggs, and shortening. Dip prepared foods in batter.

TABLE 1.10 Dipper equivalents

Dipper number[a]	*Approximate measure*	*Approximate weight*	*Suggested use*
6	10 Tbsp (⅔ cup)	6 oz	Entree salads
8	8 Tbsp (½ cup)	4–5 oz	Entrees
10	6 Tbsp (⅜ cup)	3–4 oz	Desserts, meat patties
12	5 Tbsp (⅓ cup)	2½–3 oz	Croquettes, vegetables, muffins, desserts, salads
16	4 Tbsp (¼ cup)	2–2¼ oz	Muffins, desserts, croquettes
20	3⅕ Tbsp	1¾–2 oz	Muffins, cupcakes, sauces, sandwich fillings
24	2⅔ Tbsp	1½–1¾ oz	Cream puffs
30	2⅕ Tbsp	1–1½ oz	Large drop cookies
40	1½ Tbsp	¾ oz	Drop cookies
60	1 Tbsp	½ oz	Small drop cookies, garnishes
100	Scant 2 tsp		Tea cookies

[a] Portions per quart.

Notes

- These measurements are based on food leveled off in the dipper. If food is left rounded in the dipper, the measure and weight are closer to those of the next-larger dipper.
- *Scoop* and *disher* are terms often used synonymously with *dipper*.

TABLE 1.11 Ladle equivalents

Approximate weight	*Approximate measure*	*Approximate portions per quart*	*Suggested use*
1 oz	⅛ cup	32	Sauces, salad dressings
2 oz	¼ cup	16	Gravies, some sauces
4 oz	½ cup	8	Stews, creamed dishes
6 oz	¾ cup	5	Stews, creamed dishes, soup
8 oz	1 cup	4	Soup

Note

- These measurements are based on food leveled off in the ladle. If food is left rounded in the ladle, the measure and weight are closer to those of the next-larger ladle.

TABLE 1.12 Cold food storage temperatures

	Refrigerator		*Freezer*	
Food	*°F*	*Days*	*°F*	*Months*
DAIRY/EGGS				
Ice cream			−10	3
Milk	32	7		
Eggs in shell	40	21		
Raw yolks/whites	40	2–4		
Liquid pasteurized (opened)	40	3		
FRESH MEATS				
Beef roast/steaks	32	3–5	0 to −20	6–12
Pork roast	32	3–5	0 to −20	3–6
Pork chops	32	3–5	0 to −20	3–4
Hamburger/ground pork/ ground lamb	32	1–2	0 to −20	3–4
Beef cubes	32	1–2	0 to −20	3–4
Lamb roasts/chops	32	2–3	0 to −20	6–9
Vacuum-packaged cuts	28–32	16–21	0 to −20	6–12
COOKED MEATS				
Browned meats	35	3–4	0 to −20	2–3
Bacon	35	7	0 to −20	1
Frankfurters				
Unopened package	32	14	0 to −20	1–2
Opened package	32	7	0 to −20	1–2
Lamb	32	3–4	0 to −20	2–3
Luncheon meats	32	3–5	0 to −20	1–2
FRESH POULTRY AND FISH				
Chicken/turkey				
Whole	32	1–2	0 to −20	12
Pieces	32	1–2	0 to −20	9
Fish	32	1	0 to −20	3
COOKED POULTRY				
With broth or gravy	35	1–2	0 to −20	6
Pieces, no gravy	35	3–4	0 to −20	4
Cooked dishes	35	3–4	0 to −20	4–6
Fried chicken	35	3–4	0 to −20	4

TABLE 1.13 Refrigerator defrosting times for meats, seafood, and poultry

Food	*Approximate defrosting time (in refrigerator)*
Large roast	4–7 hours per pound
Small roast	3–5 hours per pound
Chop or steak, 1 inch thick	12–14 total hours
Chicken, whole	1 day
pieces	8–12 total hours
Turkey, whole	
8–12 lb	1–2 days
12–16 lb	2–3 days
16–20 lb	3–4 days
20–24 lb	4–5 days
Seafood, whole, steaks	12–24 total hours
blocks, large whole	1–2 days

TABLE 1.14 Temperatures and bacteria growth

Temperature °F	*Bacteria activity*
212	Most bacteria destroyed
140 and above	Low survival rate, prevent bacteria growth
120–140	Survival and growth
60–120	Reproduce rapidly (99°F ideal for growth)
40–140	Survival and growth
32–40	Slow growth rate

TABLE 1.15 Safe internal temperatures for cooked foods

Food	*Internal temperature*
POULTRY	
Boneless, ground, stuffed	165°F for 15 sec
Bone-in pieces	170°F
Whole birds	180°F
GROUND/CHOPPED/TENDERIZED MEAT	
Beef, pork, sausage, lamb, fish	155°F for 15 sec (see Notes)
PORK	
Pork, ham	145°F for 15 sec
BEEF/VEAL/LAMB	
Steaks, chops, roasts (see Notes)	145°F for 15 sec
FISH	
Solid	145°F for 15 sec
Stuffed	165°F
OTHER	
Reheated foods	165°F for 15 sec (within 2 hr)
Stuffed pasta, stuffed meat	165°F for 15 sec
Eggs	155°F for 15 sec
Dairy, pasta, grains, rice	145°F for 15 sec

Note

- Whole beef and pork roasts are considered safe if cooked in a preheated oven and held for a specified length of time:

Oven Type	**Oven Temperature Based on Roast Weight**	
	Less than 4.5 kg (10 lbs)	4.5 kg (10 lbs) or more
Still Dry	177°C (350°F) or more	121°C (250°F) or more
Convection	163°C (325°F) or more	121°C (250°F) or more
High Humidity[1]	121°C (250°F) or less	121°C (250°F) or less

[1]Relative humidity greater than 90% for at least 1 hour as measured in the cooking chamber or exit of the oven; or in a moisture-impermeable bag that provides 100% humidity.

Temperature °C (°F)	**Time[1] in Minutes**	**Temperature °C (°F)**	**Time[1] in Minutes**	**Temperature °C (°F)**	**Time[1] in Minutes**
54 (130)	121	58 (136)	32	61 (142)	8
56 (132)	77	59 (138)	19	62 (144)	5
57 (134)	47	60 (140)	12	63 (145)	3

[1]*Holding time may include postoven heat rise.*

- To obtain an even temperature throughout the product, foods cooked in a microwave oven must be stirred once or twice during the cooking process and held covered for 2 minutes after cooking. When using a microwave oven, end-point temperature should reach 165°F in all parts of the food.
- Some regulatory agencies recommend cooking ground meat to 160°F, therefore removing the 15-second time requirement.

TABLE 1.16 Food serving temperatures and holding times

Food	*Serving temp °F*	*Approximate holding time*
BEVERAGES		
Cold drinks—juices	40	30 min, if poured
Hot drinks	185	30–45 min
Coffee[a]	185	Hot plate, 20 min Insulated pot, 2 hr
DAIRY		
Ice cream	10	6–8 hr, dipped
Milk	34–38	
DESSERTS		
Pudding and refrigerator desserts	41 or less	
Pastries and cakes[b]	60–70	
ENTREES, SOUP		
Beef, roast[c]	150	10–15 min
Casseroles, stews, soups	170–180	30–45 min
Chicken, baked	160	20–30 min
Eggs, scrambled	160	10–15 min
Ham, pork roast	160	10–15 min
Sandwiches, hot	160	10–15 min
SALADS		
All cold	41 or less	
SAUCES, VEGETABLES		
Hot sauces	145	30–60 min
Cold sauces	below 41	
Gravy	180	30–60 min
Vegetables in cream sauce	145–160	15–30 min
Vegetables unseasoned	160–170	15–20 min
Whipped potatoes	160–170	15–20 min

[a] Coffee brewing temperature is 195°–200°F.
[b] Some pastries may be served warm, 100°–125°F, but food products that are potential food safety risks should not be held at temperatures between 41° and 140°F. Examples are custard or pumpkin pie.
[c] Temperature will depend on the doneness of meat. Rare roast beef may be served at a temperature lower than 150°F but does pose some food safety risk.

TABLE 1.17 Food cooling and storage procedures

Standard: Cooked potentially hazardous foods (PHF) must be cooled from 140°F to 70°F within 2 hours, and then from 70°F to 41°F within an additional 4 hours (or from 140°F to 41°F within 4 hours total). PHF prepared from ingredients normally stored at room temperature, such as canned tuna, must be cooled from 70°F to 41°F within 4 hours. ***(Cooling food following the two-stage cooling method, cooling first to 70°F within 2 hours, and then from 70°F to 41°F within an additional 4 hours offers the greatest protection against microbial growth.)***

Methods for Cooling Hot Foods

A. Procedure: Cut large food items into smaller pieces.
   Application: large roasts, whole poultry or fish

B. Procedure: Pour hot, thick foods into clean, chilled, shallow, stainless steel pans, to no more than 2 inches deep.
   Application: stews, chili, pasta casseroles, pudding

C. Procedure: Pour hot, thin foods into clean pans or pots, to no more than 3 inches deep.
   Application: broth soups, thin sauces

D. Procedure: Set pan of food in an ice water bath (set pan with hot food inside another pan filled with ice). Stir both the hot food and the ice. Replace ice as it melts.
   Application: pourable thin or thick foods

E. Procedure: Delete part of the water in the recipe and add as ice in the cooling step. The weight of the ice should be equal to the water deleted from the recipe.
   Application: thick, pourable foods such as chili and pasta sauces that may be prepared, cooled, and heated for service at a later time

Methods for Chilling Cold Foods

A. Chill ingredients thoroughly before combining (i.e., salad dressings, tuna, hard-cooked eggs, canned kidney beans).

B. Put dense products into clean, chilled, shallow, stainless steel pans to no more than 2 inches deep.

Notes

- Hot foods will cool faster if loosely covered or uncovered. Protect uncovered food from contamination. Cover food tightly after chilling.
- Allow air to circulate around pans. Do not stack pans.
- Chilling time can be shortened by stirring foods with a clean utensil once or twice during cooling.

TABLE 1.18 Time and temperature standards for reducing food safety hazards of potentially hazardous foods (PHF)

Step	*Standard*
Receiving	Frozen foods at 0°F or below Refrigerated foods at 41°F or below
Storage	Frozen foods at 0°F or below Refrigerated foods at 41°F or below for 7 calendar days or 45°F for 4 calendar days (The calendar day counting period begins as day 1 on the day the food is refrigerated.)
Thawing	In refrigerator at 41°F or below Under potable, running cold water (70°F or less) for not more than 2 hours
Food Production	
Pre-preparation	Keep all PHF at 41°F or below or at 140°F or above throughout pre-preparation time. Cool cooked products rapidly to 70°F within 2 hours and from 70°F to 41°F or below in 4 additional hours or less.
Preparation	*Cold foods:* Rapid cooling to 41°F or below *Hot foods:* Cook to internal temperatures specified in the recipe (reheated foods to 165°F). Maintain hot holding temperature at or above 140°F (see Notes).
Postproduction	Cool leftover food rapidly to 70°F within 2 hours and from 70°F to 41°F or less in 4 additional hours or less. Store cooked food in clean shallow pans or containers that are no more than 4 inches deep with a product depth of no more than 2 inches. If product is thick, stir frequently until cooled.
Serving	Maintain internal temperature at 140°F or more or 41°F or less (see Notes). Do not mix old product with freshly cooked product.
Cooling	Cool rapidly to 70°F within 2 hours and from 70°F to 41°F or less in 4 additional hours or less (see Postproduction).

Notes

- In some locations, regulatory agencies will permit time to be used as control rather than holding temperatures. For time to be used as a control, the following conditions must be met: (1) The product must be marked with the time it is removed from temperature control; and (2) the product will be cooked and served or discarded within 4 hours.
- Measure all temperatures with a cleaned and sanitized stem thermometer or thermocouple thermometer.

TABLE 1.19 General guidelines for handling food safely

Activity	*Food handling practice*
Purchasing/delivery	Purchase perishable food products from a reputable distributor who follows HACCP guidelines. Upon delivery, inspect perishable food products for holes or tears in the packaging and for signs of temperature abuse. Require perishable food items to have a "sell by" or "use by" date or have a production code for tracking the product. Record delivery date for perishable food products.
Storage	Store perishable food immediately upon delivery in the freezer or refrigerator. Follow HACCP guidelines.
Food preparation	Keep everything that touches food clean—utensils, pans, bowls, countertops, hands, gloves. Wash hands before handling food, after handling raw food, and after touching anything that may contaminate hands. Use disposable gloved hands, tongs, or other methods to keep bare hands from touching ready-to-eat foods. Use separate cutting boards and utensils for cooked and uncooked meat, poultry, and fish and for raw and ready-to-eat foods. Keep juices from raw meat, poultry, and fish from contacting other foods. Sanitize all utensils, pans, bowls, and food contact surfaces after being used for preparing potentially hazardous foods and before coming in contact with raw or ready-to-eat foods.
Cooking	Cook all meat to the required internal temperature to kill harmful organisms. Measure internal temperature in several places. Wash and sanitize thermometers after each use. Use an accurate thermometer or thermocouple to measure internal temperature of potentially hazardous foods. Do not rely on color for determining if meat, chicken, or fish has reached the correct end-point temperature. Do not interrupt cooking by partially cooking potentially hazardous food and then finishing later. Return all potentially hazardous foods to refrigerator when preparation is interrupted. Work with small amount of food at a time to maintain safe temperature. Never mix old product with new.
Serving	Keep potentially hazardous food either at or below 41°F or above 140°F. Take temperatures every 30 minutes. When replenishing food on a buffet, do not mix fresh food with food that has been out for service. Do not mix raw food with cooked food. Use disposable gloved hands, tongs, or other methods to keep bare hands from touching ready-to-eat foods.
Leftovers	Freeze or refrigerate leftovers immediately. Follow established guidelines for cooling food quickly, p. 44. Reheat foods, one time only, to 165°F (within 2 hours).

TABLE 1.20 Recommended mixer bowl and steam-jacketed kettle sizes for selected products

	50 portions	*100 portions*	*200 portions*	*500 portions*
Breads, yeast	7 lb/12 qt MB[a]	14 lb/12 qt MB	28 lb/20 qt MB	70 lb/60 qt MB
Quick	10 lb/12 qt MB	20 lb/20 qt MB	40 lb/60 qt MB	100 lb/80 qt MB
Cakes, angel food	6 lb/12 qt MB	12 lb/30 qt MB	24 lb/60 qt MB	60 lb/2 batch sizes, 60 qt MB
Other	8 lb/12 qt MB	16 lb/20 qt MB	32 lb/30 qt MB	80 lb/80 qt MB
Cookies	5 lb/5 qt MB	10 lb/12 qt MB	20 lb/30 qt MB	50 lb/60 qt MB
Pastry	7 lb/12 qt MB	14 lb/20 qt MB	28 lb/30 qt MB	70 lb/80 qt MB
Pie fillings				
Fruit	12 lb/10 qt SJK 10 qt SP	24 lb/20 qt SJK 20 qt SP	48 lb/20 gal SJK	70 lb/20 gal SJK
Frozen/chiffon	12 lb/20 qt MB	24 lb/60 qt MB	48 lb/80 qt MB	120 lb/2 batch sizes, 80 qt MB
Puddings/pie fillings	12 lb/10 qt SJK 10 qt SP	24 lb/20 qt SJK 10 qt SP	48 lb/20 gal SJK	120 lb/20 gal SJK
Scrambled eggs	10 lb/12 qt MB	20 lb/20 qt MB	40 lb/60 qt MB	100 lb/2 batch sizes, 60 qt MB
Cheese soufflé	14 lb/30 qt MB	28 lb/60 qt MB	56 lb/2 batch sizes, 60 qt MB	140 lb/3 batch sizes, 80 qt MB
Meat loaf	12 lb/20 qt MB	24 lb/30 qt MB	48 lb/60 qt MB	120 lb/2 batch sizes, 80 qt MB
Spaghetti sauce	19 lb/20 qt SJK 15 qt SP	38 lb/20 gal SJK 20 qt SP	76 lb/20 gal SJK	190 lb/40 gal SJK
Pasta (and cooking water)	45 lb/20 gal SJK 25 qt SP	90 lb/20 gal SJK	180 lb/40 gal SJK	450 lb/80 gal SJK
Salad dressing	8 lb/12 qt MB	16 lb/20 qt MB	32 lb/60 qt MB	80 lb/80 qt MB
Soups/stews	25 lb/20 qt SJK 15 qt SP	50 lb/20 gal SJK 25 qt SP	100 lb/20 gal SJK	250 lb/40 gal SJK
Mashed potatoes	15 lb/20 qt MB	30 lb/30 qt MB	60 lb/80 qt MB	150 lb/3 batch sizes, 80 qt MB
Whipped cream or topping	1 1/2 qt/5 qt MB	3 qt/12 qt MB	6 qt/30 qt MB	15 qt/60 qt MB

[a] Abbreviations used: MB = mixer bowl; SJK = steam-jacketed kettle; SP = stock pot.

TABLE 1.21 Pan capacities for baked products

Pan size	*Maximum capacity*	*Portion*	*Suggested use*
18 × 26 × 2 inches (cake pan)	8–10 lb	Cut 6 × 10 (3 × $2\frac{1}{2}$ inches)	Cakes
18 × 26 × 1 inch (sheet pan)	4–6 lb	Cut 6 × 10 (3 × $2\frac{1}{2}$ inches)	Sheet cakes, bar cookies
		Panned 8 × 12	Dinner rolls
		Dropped 3 × 5	Cookies
13 × 18 × 1 inch (half sheet pan)	2–3 lb	Cut 5 × 6 ($2\frac{1}{2}$ × 3 inches)	Sheet cakes, bar cookies
12 × 18 × 2 inches	4–5 lb	Cut 5 × 6 ($2\frac{1}{2}$ × 3 inches)	Cakes
10-inch tube	2–$2\frac{1}{2}$ lb	Cut $\frac{1}{14}$	Chiffon cakes
9-inch round (cake)	$1\frac{1}{2}$ lb	Cut $\frac{1}{16}$	Layer cakes, corn bread
8-inch round (cake)	$1\frac{1}{4}$ lb	Cut $\frac{1}{12}$–$\frac{1}{14}$	Layer cakes
9-inch round (pie)	$1\frac{1}{2}$ lb	Cut $\frac{1}{8}$	Pies
8-inch round (pie)	1 lb	Cut $\frac{1}{6}$	Pies
5 × 16 × 4 inches (loaf)	3–5 lb	Cut $\frac{1}{24}$–$\frac{1}{32}$	Quick breads, yeast breads
		Cut $\frac{1}{24}$	Cakes
5 × 8 × 4 inches (loaf)	$1\frac{1}{2}$–$2\frac{1}{2}$ lb	Cut $\frac{1}{12}$–$\frac{1}{16}$	Quick breads, yeast breads
		Cut $\frac{1}{12}$	Cakes
5 × 9 × $2\frac{3}{4}$ inches (loaf)	$1\frac{1}{2}$–2 lb	Cut $\frac{1}{16}$	Quick breads, yeast breads, cakes

Notes

- The product volume/weight ratio will dictate the weight per pan.
- See recipes for specific instruction.
- A formula for determining scaling weight of cakes is given on p. 156.

TABLE 1.22 Counter pan capacities

Pan size	*Depth (in inches)*	*Maximum capacity*		*Number of portions*					*Suggested use*
		lb	*qt*	*Cut*	*1 oz*	*2 oz*	*4 oz*	*8 oz*	
Full size 20 × 12 inches	2	12–15	8	48 (3 × 2½ inches)			67	33	Baked entrees Baked desserts
	4	24–30	14	24 (3 × 3⅓ inches) 32 (3 × 2½ inches)			113	56	Baked entrees
Half size 10 × 12 inches	2½	6–7	4	12 (3 × 3 inches)			34	17	Baked entrees
				16 (3 × 2½ inches)			34	17	Baked entrees
	4	12–15	6½				53	27	Baked entrees
	6		10				80	40	Vegetables
One-third size 6 ⅞ × 12 ¾ inches	2				85	42			Salad bar items
	4				134	67			Condiments
	6				197	98			Sauces
One-fourth size 6 ⅜ × 10 ⅜ inches	2				60	30			Salad bar items
	4				96	48			Condiments
	6				146	73			Sauces

TABLE 1.23 Common can sizes

Can size (industry term)	*Approximate net weight or fluid measure*	*Approxi-` mate cups per can*	*Approximate number of 4-oz portions*	*Principal products*
No. 10	6 lb/7 lb 5 oz	9–12	25	Institutional size for fruits, vegetables
No. 5 Squat	4–4¼ lb	8	16–20	Institutional size for canned fish, sweet potatoes
No. 3 Cyl	46 fl oz or 51 fl oz	5¼	10–12	Fruit and vegetable juices, condensed soups
No. 2½	26–30 oz	3½	5–7	Fruits, some vegetables
No. 2	18 fl oz or 20 oz	2½	5	Juices, fruits, ready-to-serve soups
No. 303	1 lb	2	4	Fruits, vegetables, ready-to-serve soups
No. 300	14–16 oz	1¾	3–4	Some fruits and meat products
No. 1 (Picnic)	10½–12 oz	1¼	2–3	Condensed soups
8 oz	8 oz	1	2	Ready-to-serve soups, fruits, vegetables

Note

- When substituting one can for another size, one No. 10 can is approximately equivalent to:
  7 No. 303 (1 lb) cans
  5 No. 2 (1 lb 4 oz) cans
  4 No. 2½ (1 lb 13 oz) cans
  2 No. 3 (46 to 50 oz) cans

TABLE 1.24 Ingredient substitutions (approximate)

Recipe item	*Amount*	*Substitute ingredient*
Baking powder	1 tsp	¼ tsp baking soda + ½ tsp cream of tartar ¼ tsp baking soda + ½ cup buttermilk or sour milk (to replace ½ cup of the liquid)
Butter or margarine	1 lb	14 oz hydrogenated shortening + 1 tsp salt 14 oz (1⅜ cups) oil + 1 tsp salt
Buttermilk	1 cup	1 Tbsp lemon juice or vinegar + enough whole milk to make 1 cup (let stand 5 min before using) or 1 cup unflavored yogurt
Celery, fresh	8 oz	4 oz celery flakes, dry
Chocolate, unsweetened	1 oz (1 square)	3 Tbsp cocoa + 1 Tbsp (½ oz) fat
Cocoa	3 Tbsp	1 oz chocolate; reduce fat in recipe by 1 Tbsp
Cornstarch (thickening)	1 Tbsp 1 oz 1 Tbsp 1 oz	2 Tbsp flour, all-purpose 2 oz flour, all purpose 2 tsp waxy maize starch ¾ oz waxy maize starch
Cream		
Half and half	1 cup	¾ cup milk + 2–3 Tbsp fat
Whipping	1 cup	¾ cup milk + ⅓ cup fat
Flour, all-purpose	1 cup (4 oz)	1½ cups bread flour 1 cup + 2 Tbsp cake flour 1 cup rye or whole wheat flour 1 cup less 2 Tbsp cornmeal 1 cup rolled oats 1½ cups bread crumbs
Flour, all-purpose (thickening)	1 oz	1⅓ oz quick-cooking tapioca ½ cup cornmeal ⅔ oz cornstarch ½ oz waxy maize starch, arrowroot ¾ oz bread crumbs
Flour, cake	1 cup (4 oz)	1 cup less 2 Tbsp all-purpose flour
Garlic	1 medium clove	⅛ tsp garlic powder ½ tsp garlic, minced, dry ½ tsp garlic salt
Green peppers, fresh, chopped	8 oz EP	1 oz green pepper flakes, dry
Herbs, fresh	1 Tbsp	1 tsp whole dried ¼ tsp ground
Honey	1 cup	1¼ cups granulated sugar + ¼ cup liquid
Milk, fluid, whole	1 cup	1 oz (⅓ cup) nonfat dry milk + water to make 1 cup + 1 Tbsp fat (optional) ½ cup evaporated milk + ½ cup water
	1 qt	4 oz nonfat dry milk + water to make 1 qt + 1¼ oz fat (optional)

continues

TABLE 1.24 *continued*

Recipe item	*Amount*	*Substitute ingredient*
Milk, sour[a]	1 cup	1 Tbsp vinegar or lemon juice + sweet milk to make 1 cup
Mushrooms, fresh	1 lb (6 cups)	3 cups processed mushrooms
Onions, fresh, chopped	8 oz EP	1 oz dehydrated onions, chopped or minced[b]
Parsley, fresh, chopped	8 oz EP	3 oz parsley flakes, dry
Sour cream	1 cup	1 cup yogurt
Stock, chicken or beef	1 gal	3 oz concentrated soup base + 1 gal water (commercial products may vary in strength; follow manufacturer's directions)
Sugar, brown	1 cup	1 cup granulated sugar + 2 Tbsp molasses
Sugar, granulated	1 cup (8 oz)	1⅓ cups brown sugar 1½ cups powdered sugar 1¼–1½ cups corn syrup less ¼–½ cup liquid in recipe 1 cup honey less ¼–⅓ cup liquid in recipe 1⅓ cups molasses less ⅓ cup liquid in recipe
Tapioca, quick-cooking	1 Tbsp	1 Tbsp all-purpose flour (for thickening)
Yeast, active dry	¼ oz (1 pkg) 1 oz	1 cake compressed 2 oz compressed
Yeast, instant		See manufacturer's directions for conversion from active dry or compressed

[a] To substitute buttermilk or sour milk for sweet milk, add ½ tsp baking soda and decrease baking powder by 2 tsp per cup of milk.

[b] Rehydrate onions unless they are to be used in a recipe in which there is a large volume of liquid. To rehydrate, cover onions with water, using the ratio of 1 oz dehydrated onions (½ cup) to ¾ cup of water. Let stand 20–30 minutes.

TABLE 1.25 Ingredient proportions

Function	*Ingredient*	*Relative proportion*
Leavening agents	Baking powder	1½–2 Tbsp to 1 lb flour
	Baking soda	2 tsp to 1 qt sour milk or molasses
	Yeast	½–1 envelope dry (⅛–¼ oz) to 1 lb flour (varies with ingredients and time allowed)
Seasonings	Salt	1–2 tsp to 1 lb flour
		1¼ tsp to 1 lb meat
		2 tsp to 1 qt water (for cereal)
		2½ tsp to 1 pt liquid (for rolls)
Thickening agents	Eggs	4–6 whole eggs to 1 qt milk
		8–12 egg yolks to 1 qt milk
		8–12 egg whites to 1 qt milk
	Flour	½ oz to 1 qt liquid—very thin sauce (cream soups, starchy vegetables)
		1 oz to 1 qt liquid—thin sauce (cream soups, nonstarchy vegetables)
		2 oz to 1 qt liquid—medium sauce (creamed foods, gravy)
		3–4 oz to 1 qt liquid—thick sauce (soufflés)
		4–5 oz to 1 qt liquid—very thick sauce (croquettes)
		1 lb to 1 qt liquid—pour batter (popovers)
		2 lb to 1 qt liquid—drop batter (cake muffins)
		3 lb to 1 qt liquid—soft dough (biscuits, rolls)
		4 lb to 1 qt liquid—stiff dough (pastry, cookies, noodles)
	Gelatin, granulated, unflavored	2 Tbsp to 1 qt liquid—plain gelatins (gelatin and fruit juices)
		2 Tbsp to 1 qt liquid—whips (gelatin and fruit juices whipped)
		3 Tbsp to 1 qt liquid—fruit gelatins (gelatin, fruit juices, and chopped fruit)
		3 Tbsp to 1 qt liquid—vegetable gelatins (gelatin, liquid, and chopped vegetables)
		3 Tbsp to 1 qt liquid—sponges (gelatin, fruit juice, and beaten egg whites)
		4 Tbsp to 1 qt liquid—Bavarian cream (gelatin, fruit juice, fruit pulp, and whipped cream)

Note

- See Table 1.24 for ingredient substitutions.

TABLE 1.26 Guide for rounding off weights and measures

If the total amount of an ingredient is	*Round it to*
Weights	
Less than 2 oz	Measure unless weight is ¼-, ½-, or ¾-oz amounts
2–10 oz	Closest ¼ oz or convert to measure
More than 10 oz but less than 2 lb 8 oz	Closest ½ oz
2 lb 8 oz–5 lb	Closest full ounce
More than 5 lb	Closest ¼ lb
Measures	
Less than 1 Tbsp	Closest ⅛ tsp
More than 1 Tbsp but less than 3 Tbsp	Closest ¼ tsp
3 Tbsp–½ cup	Closest ½ tsp or convert to weight
More than ½ cup but less than ¾ cup	Closest full tsp or convert to weight
More than ¾ cup but less than 2 cups	Closest full Tbsp or convert to weight
2 cups–2 qt	Nearest ¼ cup
More than 2 qt but less than 4 qt	Nearest ½ cup
1–2 gal	Nearest full cup or ¼ qt
More than 2 gal but less than 10 gal[a]	Nearest full quart
More than 10 gal but less than 20 gal[a]	Closest ½ gal
More than 20 gal[a]	Closest full gallon

[a] For baked goods or products in which accurate ratios are critical, always round to the nearest full cup or ¼ qt.

Note

- This table is intended to aid in rounding fractions and complex measurements into amounts that are as simple as possible to weigh or measure while maintaining the accuracy needed for quality control.

TABLE 1.27 Ounces and decimal equivalents of a pound

Ounces	*Decimal part of a pound*	*Ounces*	*Decimal part of a pound*	*Ounces*	*Decimal part of a pound*
¼	0.016	5¾	0.359	11¼	0.703
½	0.031	6	0.375	11½	0.719
¾	0.047	6¼	0.391	11¾	0.734
1	0.063	6½	0.406	12	0.750
1¼	0.078	6¾	0.422	12¼	0.766
1½	0.094	7	0.438	12½	0.781
1¾	0.109	7¼	0.453	12¾	0.797
2	0.125	7½	0.469	13	0.813
2¼	0.141	7¾	0.484	13¼	0.828
2½	0.156	8	0.500	13½	0.844
2¾	0.172	8¼	0.516	13¾	0.859
3	0.188	8½	0.531	14	0.875
3¼	0.203	8¾	0.547	14¼	0.891
3½	0.219	9	0.563	14½	0.906
3¾	0.234	9¼	0.578	14¾	0.922
4	0.250	9½	0.594	15	0.938
4¼	0.266	9¾	0.609	15¼	0.953
4½	0.281	10	0.625	15½	0.969
4¾	0.297	10¼	0.641	15¾	0.984
5	0.313	10½	0.656	16	1.000
5¼	0.328	10¾	0.672		
5½	0.344	11	0.688		

Note

- This table is useful when increasing or decreasing recipes. The multiplication or division of pounds and ounces is simplified if the ounces are converted to decimal parts of a pound. For example, when multiplying 1 lb 9 oz by 3, first change the 9 oz to 0.563 lb, using the table. Thus, the 1 lb 9 oz becomes 1.563 lb, which multiplied by 3 is 4.683 lb or 4 lb 11 oz.

Direct-Reading Measurement Tables

Recipe adjustment may be made by using tables that have been developed for different numbers of portions. Using these charts requires minimal calculation. Table 1.28 can be used when the desired yields are divisible by 25 and the ingredients are given in *weights*. Table 1.29 is used when recipe ingredients are given in *volume measurements* and the yields can be divided by 25. Table 1.30 has yields that can be divided by 8 and is useful in enlarging home-size recipes. Following are instructions for using direct-reading measurement tables.

Directions for Using Tables 1.28 and 1.29

The choice of Tables 1.28 or 1.29 depends on whether the recipe ingredients are given in weights (ounces and pounds) or in volume measurements (teaspoons, tablespoons, cups, quarts, or gallons). Table 1.28 is used for converting weighed ingredients using recipe yields that are divisible by 25. Table 1.29 is used for converting volume measures of ingredients using recipe yields that are divisible by 25. To adjust recipes, follow these steps:

1. Locate the column that corresponds to the original yield of the recipe to be adjusted. For example, assume the original recipe yields 100 portions. Locate the "100" column across the top of the chart on Table 1.28.
2. Go down this column to the amount of the ingredient required (or to the closest number to that figure) in the recipe to be adjusted. If the recipe for 100 portions requires 21 lb of ground beef, for example, go down the column headed 100 to the figure "21."
3. Then go across the page, in line with that amount, to the column that is headed to correspond with the yield desired. For example, if only 75 portions are desired, begin with the 21 lb figure in the "100" column and slide across to the column headed "75" and read that figure. It indicates that 15 lb 12 oz of ground beef would be required to make 75 portions with this recipe.
4. Record this figure as the amount of the ingredient required for the new yield of the recipe. Repeat steps 1, 2, and 3 for each ingredient in the original recipe to obtain the adjusted ingredient weight needed for the new yield. Follow the same procedure using Table 1.29 in adjusting ingredient amounts indicated in volume measures. Yields can be either increased or decreased in this manner.

5. If two columns need to be combined to obtain the desired yield, follow steps 1 through 4 and add together the amounts given in the two columns to obtain the amount required for the adjusted yield. For example, to find the amount of ground beef for 225 portions of our hypothetical recipe, locate the figures in columns headed "200" and "25" and add them together. In this example it would be 42 lb + 5 lb 4 oz, so the required total for ground beef would be 47 lb 4 oz.
6. The figures given in these tables are given in exact weights including fractional ounces. After making yield adjustments for every ingredient, refer to Table 1.26 for rounding off fractional amounts that are not of sufficient proportion to change product quality.

Abbreviations used in the charts include the following:

- oz = ounce
- lb = pound
- tsp = teaspoon
- Tbsp = tablespoon
- qt = quart
- gal = gallon
- (r) = slightly rounded
- (s) = scant

Equivalents helpful in using the charts include:

- 3 tsp = 1 Tbsp
- 4 Tbsp = ¼ cup
- 5 Tbsp + 1 tsp = ⅓ cup
- 8 Tbsp = ½ cup
- 10 Tbsp + 2 tsp = ⅔ cup
- 12 Tbsp = ¾ cup
- 16 Tbsp = 1 cup
- 4 cups = 1 qt
- 4 qt = 1 gal

TABLE 1.28 Direct-reading table for adjusting weight ingredients of recipes divisible by 25[a] (pp. 56–57)

25	50	75	100	200	300	400	500
*[b]	*	*	¼ oz	½ oz	¾ oz	1 oz	1¼ oz
*	*	*	½ oz	1 oz	1½ oz	2 oz	2½ oz
*	*	*	¾ oz	1½ oz	2¼ oz	3 oz	3¾ oz
¼ oz	½ oz	¾ oz	1 oz	2 oz	3 oz	4 oz	5 oz
*	*	*	1¼ oz	2½ oz	3¾ oz	5 oz	6¼ oz
*	¾ oz	*	1½ oz	3 oz	4½ oz	6 oz	7½ oz
*	*	*	1¾ oz	3½ oz	5¼ oz	7 oz	8¾ oz
½ oz	1 oz	1½ oz	2 oz	4 oz	6 oz	8 oz	10 oz
*	*	1¾ oz	2¼ oz	4½ oz	6¾ oz	9 oz	11¼ oz
*	1¼ oz	2 oz	2½ oz	5 oz	7½ oz	10 oz	12½ oz
*	*	2 oz	2¾ oz	5½ oz	8¼ oz	11 oz	13¾ oz
¾ oz	1½ oz	2¼ oz	3 oz	6 oz	9 oz	12 oz	15 oz
*	*	2½ oz	3¼ oz	6½ oz	9¾ oz	13 oz	1 lb ¼ oz
*	1¾ oz	2¾ oz	3½ oz	7 oz	10½ oz	14 oz	1 lb 1½ oz
1 oz	2 oz	2¾ oz	3¾ oz	7½ oz	11¼ oz	15 oz	1 lb 2¾ oz
1 oz	2 oz	3 oz	4 oz	8 oz	12 oz	1 lb	1 lb 4 oz
1 oz	2¼ oz	3¼ oz	4¼ oz	8½ oz	12¾ oz	1 lb 1 oz	1 lb 5¼ oz
*	2½ oz	3½ oz	4½ oz	9 oz	13½ oz	1 lb 2 oz	1 lb 6½ oz
*	2½ oz	3½ oz	4¾ oz	9½ oz	14¼ oz	1 lb 3 oz	1 lb 7¾ oz
1¼ oz	2½ oz	3¾ oz	5 oz	10 oz	15 oz	1 lb 4 oz	1 lb 9 oz
*	2¾ oz	4¼ oz	5½ oz	11 oz	1 lb ½ oz	1 lb 6 oz	1 lb 11½ oz
1½ oz	3 oz	4½ oz	6 oz	12 oz	1 lb 2 oz	1 lb 8 oz	1 lb 14 oz
*	3¼ oz	4¾ oz	6½ oz	13 oz	1 lb 3½ oz	1 lb 10 oz	2 lb ½ oz
1¾ oz	3¾ oz	5¼ oz	7 oz	14 oz	1 lb 5 oz	1 lb 12 oz	2 lb 3 oz
2 oz	3¾ oz	5¾ oz	7½ oz	15 oz	1 lb 6½ oz	1 lb 14 oz	2 lb 5½ oz
2 oz	4 oz	6 oz	8 oz	1 lb	1 lb 8 oz	2 lb	2 lb 8 oz
2¼ oz	4¼ oz	6½ oz	8½ oz	1 lb 1 oz	1 lb 9½ oz	2 lb 2 oz	2 lb 10½ oz
2¼ oz	4½ oz	6¾ oz	9 oz	1 lb 2 oz	1 lb 11 oz	2 lb 4 oz	2 lb 13 oz
2½ oz	4¾ oz	7¼ oz	9½ oz	1 lb 3 oz	1 lb 12½ oz	2 lb 6 oz	2 lb 15½ oz
2½ oz	5 oz	7½ oz	10 oz	1 lb 4 oz	1 lb 14 oz	2 lb 8 oz	3 lb 2 oz
2¾ oz	5½ oz	8¼ oz	11 oz	1 lb 6 oz	2 lb 1 oz	2 lb 12 oz	3 lb 7 oz
3 oz	6 oz	9 oz	12 oz	1 lb 8 oz	2 lb 4 oz	3 lb	3 lb 12 oz
3¼ oz	6½ oz	9¾ oz	13 oz	1 lb 10 oz	2 lb 7 oz	3 lb 4 oz	4 lb 1 oz
3½ oz	7 oz	10½ oz	14 oz	1 lb 12 oz	2 lb 10 oz	3 lb 8 oz	4 lb 6 oz
3¾ oz	7½ oz	11¼ oz	15 oz	1 lb 14 oz	2 lb 13 oz	3 lb 12 oz	4 lb 11 oz
4 oz	8 oz	12 oz	1 lb	2 lb	3 lb	4 lb	5 lb
4½ oz	9 oz	13½ oz	1 lb 2 oz	2 lb 4 oz	3 lb 6 oz	4 lb 8 oz	5 lb 10 oz
5 oz	10 oz	15 oz	1 lb 4 oz	2 lb 8 oz	3 lb 12 oz	5 lb	6 lb 4 oz
5½ oz	11 oz	1 lb ½ oz	1 lb 6 oz	2 lb 12 oz	4 lb 2 oz	5 lb 8 oz	6 lb 14 oz
6 oz	12 oz	1 lb 2 oz	1 lb 8 oz	3 lb	4 lb 8 oz	6 lb	7 lb 8 oz
6½ oz	13 oz	1 lb 3½ oz	1 lb 10 oz	3 lb 4 oz	4 lb 14 oz	6 lb 8 oz	8 lb 2 oz
7 oz	14 oz	1 lb 5 oz	1 lb 12 oz	3 lb 8 oz	5 lb 4 oz	7 lb	8 lb 12 oz
7½ oz	15 oz	1 lb 6½ oz	1 lb 14 oz	3 lb 12 oz	5 lb 10 oz	7 lb 8 oz	9 lb 6 oz
8 oz	1 lb	1 lb 8 oz	2 lb	4 lb	6 lb	8 lb	10 lb
8½ oz	1 lb 1 oz	1 lb 9½ oz	2 lb 2 oz	4 lb 4 oz	6 lb 6 oz	8 lb 8 oz	10 lb 10 oz
9 oz	1 lb 2 oz	1 lb 11 oz	2 lb 4 oz	4 lb 8 oz	6 lb 12 oz	9 lb	11 lb 4 oz
9½ oz	1 lb 3 oz	1 lb 12½ oz	2 lb 6 oz	4 lb 12 oz	7 lb 2 oz	9 lb 8 oz	11 lb 14 oz
10 oz	1 lb 4 oz	1 lb 14 oz	2 lb 8 oz	5 lb	7 lb 8 oz	10 lb	12 lb 8 oz
11 oz	1 lb 6 oz	2 lb 1 oz	2 lb 12 oz	5 lb 8 oz	8 lb 4 oz	11 lb	13 lb 12 oz

[a] To be used with Table 1.29, which is similarly constructed for volume measures.
[b] An asterisk(*) means these amounts cannot be weighed accurately without introducing errors.

TABLE 1.28 *continued*

25	*50*	*75*	*100*	*200*	*300*	*400*	*500*
12 oz	1 lb 8 oz	2 lb 4 oz	3 lb	6 lb	9 lb	12 lb	15 lb
13 oz	1 lb 10 oz	2 lb 7 oz	3 lb 4 oz	6 lb 8 oz	9 lb 12 oz	13 lb	16 lb 4 oz
14 oz	1 lb 12 oz	2 lb 10 oz	3 lb 8 oz	7 lb	10 lb 8 oz	14 lb	17 lb 8 oz
15 oz	1 lb 14 oz	2 lb 13 oz	3 lb 12 oz	7 lb 8 oz	11 lb 4 oz	15 lb	18 lb 12 oz
1 lb	2 lb	3 lb	4 lb	8 lb	12 lb	16 lb	20 lb
1 lb 1 oz	2 lb 2 oz	3 lb 3 oz	4 lb 4 oz	8 lb 8 oz	12 lb 12 oz	17 lb	21 lb 4 oz
1 lb 2 oz	2 lb 4 oz	3 lb 6 oz	4 lb 8 oz	9 lb	13 lb 8 oz	18 lb	22 lb 8 oz
1 lb 3 oz	2 lb 6 oz	3 lb 9 oz	4 lb 12 oz	9 lb 8 oz	14 lb 4 oz	19 lb	23 lb 12 oz
1 lb 4 oz	2 lb 8 oz	3 lb 12 oz	5 lb	10 lb	15 lb	20 lb	25 lb
1 lb 5 oz	2 lb 10 oz	3 lb 15 oz	5 lb 4 oz	10 lb 8 oz	15 lb 12 oz	21 lb	26 lb 4 oz
1 lb 6 oz	2 lb 12 oz	4 lb 2 oz	5 lb 8 oz	11 lb	16 lb 8 oz	22 lb	27 lb 8 oz
1 lb 7 oz	2 lb 14 oz	4 lb 5 oz	5 lb 12 oz	11 lb 8 oz	17 lb 4 oz	23 lb	28 lb 12 oz
1 lb 8 oz	3 lb	4 lb 8 oz	6 lb	12 lb	18 lb	24 lb	30 lb
1 lb 10 oz	3 lb 4 oz	4 lb 14 oz	6 lb 8 oz	13 lb	19 lb 8 oz	26 lb	32 lb 8 oz
1 lb 12 oz	3 lb 8 oz	5 lb 4 oz	7 lb	14 lb	21 lb	28 lb	35 lb
1 lb 14 oz	3 lb 12 oz	5 lb 10 oz	7 lb 8 oz	15 lb	22 lb 8 oz	30 lb	37 lb 8 oz
2 lb	4 lb	6 lb	8 lb	16 lb	24 lb	32 lb	40 lb
2 lb 2 oz	4 lb 4 oz	6 lb 6 oz	8 lb 8 oz	17 lb	25 lb 8 oz	34 lb	42 lb 8 oz
2 lb 4 oz	4 lb 8 oz	6 lb 12 oz	9 lb	18 lb	27 lb	36 lb	45 lb
2 lb 6 oz	4 lb 12 oz	7 lb 2 oz	9 lb 8 oz	19 lb	28 lb 8 oz	38 lb	47 lb 8 oz
2 lb 8 oz	5 lb	7 lb 8 oz	10 lb	20 lb	30 lb	40 lb	50 lb
2 lb 12 oz	5 lb 8 oz	8 lb 4 oz	11 lb	22 lb	33 lb	44 lb	55 lb
3 lb	6 lb	9 lb	12 lb	24 lb	36 lb	48 lb	60 lb
3 lb 4 oz	6 lb 8 oz	9 lb 12 oz	13 lb	26 lb	39 lb	52 lb	65 lb
3 lb 8 oz	7 lb	10 lb 8 oz	14 lb	28 lb	42 lb	56 lb	70 lb
3 lb 12 oz	7 lb 8 oz	11 lb 4 oz	15 lb	30 lb	45 lb	60 lb	75 lb
4 lb	8 lb	12 lb	16 lb	32 lb	48 lb	64 lb	80 lb
4 lb 4 oz	8 lb 8 oz	12 lb 12 oz	17 lb	34 lb	51 lb	68 lb	85 lb
4 lb 8 oz	9 lb	13 lb 8 oz	18 lb	36 lb	54 lb	72 lb	90 lb
4 lb 12 oz	9 lb 8 oz	14 lb 2 oz	19 lb	38 lb	57 lb	76 lb	95 lb
5 lb	10 lb	15 lb	20 lb	40 lb	60 lb	80 lb	100 lb
5 lb 4 oz	10 lb 8 oz	15 lb 12 oz	21 lb	42 lb	63 lb	84 lb	105 lb
5 lb 8 oz	11 lb	16 lb 8 oz	22 lb	44 lb	66 lb	88 lb	110 lb
5 lb 12 oz	11 lb 8 oz	17 lb 4 oz	23 lb	46 lb	69 lb	92 lb	115 lb
6 lb	12 lb	18 lb	24 lb	48 lb	72 lb	96 lb	120 lb
6 lb 4 oz	12 lb 8 oz	18 lb 12 oz	25 lb	50 lb	75 lb	100 lb	125 lb
7 lb 8 oz	15 lb	22 lb 8 oz	30 lb	60 lb	90 lb	120 lb	150 lb
8 lb 12 oz	17 lb 8 oz	26 lb 4 oz	35 lb	70 lb	105 lb	140 lb	175 lb
10 lb	20 lb	30 lb	40 lb	80 lb	120 lb	160 lb	200 lb
11 lb 4 oz	22 lb 8 oz	33 lb 12 oz	45 lb	90 lb	135 lb	180 lb	225 lb
12 lb 8 oz	25 lb	37 lb 8 oz	50 lb	100 lb	150 lb	200 lb	250 lb

Used with permission from *Quantity Food Preparation: Standardizing Recipes and Controlling Ingredients.*

TABLE 1.29 Direct-reading table for adjusting recipes with ingredient amounts given in volume measurement and divisible by 25[a] (pp. 58–62)

25	*50*	*75*	*100*
¼ tsp ¼ tsp (r) ¼ tsp + ½ tsp ½ tsp (s)	½ tsp ½ tsp (r) ¾ tsp ¾ tsp (r)	¾ tsp 1 tsp (s) 1 tsp + ⅛ tsp 1¼ tsp (r)	1 tsp 1¼ tsp 1½ tsp 1¾ tsp
½ tsp ½ tsp (r) ½ tsp+ ⅛ tsp	1 tsp 1 tsp + ⅛ tsp 1¼ tsp	1½ tsp 1¾ tsp(s) 2 tsp (s)	2 tsp 2¼ tsp 2½ tsp
¾ tsp (s)	1¼ tsp + ⅛ tsp	2 tsp(r)	2¾ tsp
¾ tsp	1½ tsp	2¼ tsp	1 Tbsp
1 tsp + ⅛ tsp	2¼ tsp	1 Tbsp + ¼ tsp + ⅛ tsp	1½ Tbsp
1½ tsp	1 Tbsp	1½ Tbsp	2 Tbsp
1¾ tsp + ⅛ tsp	1 Tbsp + ¾ tsp	1 Tbsp + 2½ tsp+ ⅛ tsp	2½ Tbsp
2¼ tsp	1½ Tbsp	2 Tbsp + ¾ tsp	3 Tbsp
2¼ tsp + ⅛ tsp	1 Tbsp + 2¼ tsp	2 Tbsp + 1½ tsp + ⅛ tsp	3½ Tbsp
1 Tbsp 1 Tbsp + 1 tsp 2 Tbsp	2 Tbsp 2 Tbsp + 2 tsp ¼ cup	3 Tbsp ¼ cup ¼ cup + 2 Tbsp	½ cup ⅓ cup ½ cup
2 Tbsp + 2 tsp	⅓ cup	½ cup	⅔ cup
3 Tbsp	6 Tbsp	½ cup + 1 Tbsp	¾ cup
¼ cup	½ cup	¾ cup	1 cup
¼ cup + 1 Tbsp	½ cup + 2 Tbsp	¾ cup + 3 Tbsp	1¾ cups
⅓ cup	⅔ cup	1 cup	1⅓ cups
⅓ cup + 2 tsp	¾ cup	1 cup + 2 Tbsp	1½ cups
6 Tbsp + 2 tsp	¾ cup + 4 tsp	1¼ cups	1⅔ cups
¼ cup + 3 Tbsp	¾ cup + 2 Tbsp	1¼ cups + 1 Tbsp	1¾ cups
½ cup	1 cup	1½ cups	2 cups
½ cup + 1 Tbsp	1 cup + 2 Tbsp	1½ cups + 3 Tbsp	2¼ cups
½ cup + 4 tsp	1 cup + 2 Tbsp + 2 tsp	1¾ cups	2⅓ cups
½ cup + 2 Tbsp	1¼ cups	1¾ cups + 2 Tbsp	2½ cups
⅔ cup	1⅓ cups	2 cups	2⅔ cups
½ cup + 3 Tbsp	1¼ cups + 2 Tbsp	2 cups + 1 Tbsp	2¾ cups
¾ cup	1½ cups	2¼ cups	3 cups
¾ cup + 1 Tbsp	1½ cups + 2 Tbsp	2¼ cups + 3 Tbsp	3¼ cups
¾ cup + 4 tsp	1⅔ cups	2½ cups	3⅓ cups
¾ cup + 2 Tbsp	1¾ cups	2½ cups + 2 Tbsp	3½ cups

[a] To be used with Table 1.28, which is similarly constructed for weight measures.

TABLE 1.29 *continued*

200	*300*	*400*	*500*
2 tsp 2½ tsp 1 Tbsp 1 Tbsp + ½ tsp	1 Tbsp 1 Tbsp + ¾ tsp 1½ Tbsp 1 Tbsp + 2¼ tsp	1 Tbsp + 1 tsp 1 Tbsp + 2 tsp 2 Tbsp 2 Tbsp + 1 tsp	1 Tbsp + 2 tsp 2 Tbsp + ¼ tsp 2½ Tbsp 2 Tbsp + 2¾ tsp
1 Tbsp + 1 tsp 1½ Tbsp 1 Tbsp + 2 tsp	2 Tbsp 2 Tbsp + ¾ tsp 2½ Tbsp	2 Tbsp + 2 tsp 3 Tbsp 3 Tbsp + 1 tsp	3 Tbsp + 1 tsp 3 Tbsp + 2¼ tsp 4 Tbsp + ½ tsp
1 Tbsp + 2½ tsp	2 Tbsp + 2¼ tsp	3 Tbsp + 2 tsp	4 Tbsp + 1¾ tsp
2 Tbsp	3 Tbsp	¼ cup	5 Tbsp
3 Tbsp	¼ cup + 1½ tsp	⅓ cup + 2 tsp	¼ cup + 3½ Tbsp
¼ cup	¼ cup + 2 Tbsp	½ cup	½ cup + 2 Tbsp
¼ cup + 1 Tbsp	¼ cup + 3½ Tbsp	½ cup + 2 Tbsp	¾ cup + ½ Tbsp
⅓ cup + 2 tsp	½ cup + 1 Tbsp	¾ cup	¾ cup + 3 Tbsp
¼ cup + 3 Tbsp	½ cup + 2½ Tbsp	¾ cup + 2 Tbsp	1 cup + 1½ Tbsp
½ cup ⅔ cup 1 cup	¾ cup 1 cup 1½ cups	1 cup 1⅓ cups 2 cups	1¼ cups 1⅔ cups 2½ cups
1⅓ cups	2 cups	2⅔ cups	3⅓ cups
1½ cups	2¼ cups	3 cups	3¾ cups
2 cups	3 cups	1 qt	1¼ qt
2½ cups	3¾ cups	1¼ qt	1½ qt + ¼ cup
2⅔ cups	1 qt	1¼ qt + ⅓ cup	1½ qt + ⅔ cup
3 cups	1 qt + ½ cup	1½ qt	1¾ qt + ½ cup
3⅓ cups	1¼ qt	1½ qt + ⅔ cup	2 qt + ⅓ cup
3½ cups	1¼ qt + ¼ cup	1¾ qt	2 qt + ¾ cup
1 qt	1½ qt	2 qt	2½ qt
1 qt + ½ cup	1½ qt + ¾ cup	2¼ qt	2¼ qt + ¼ cup
1 qt + ⅔ cup	1¾ qt	2¼ qt + ⅓ cup	2¾ qt + ⅔ cup
1¼ qt	1¾ qt + ½ cup	2½ qt	3 qt + 1½ cups
1¼ qt + ⅓ cup	2 qt	2½ qt+ ⅔ cup	3qt + 1⅓ cups
1¼ qt + ½ cup	2 qt + ¼ cup	2¾ qt	3¼ qt + ¾ cup
1½ qt	2¼ qt	3 qt	3¾ qt
1½ qt + ½ cup	2¼ qt + ¾ cup	3¼ qt	1 gal + ¼ cup
1½ qt + ⅔ cup	2½ qt	3¼ qt + ⅓ cup	1 gal + ⅔ cup
1¾ qt	2½ qt + ½ cup	3½ qt	1 gal + 1½ cups

continues

TABLE 1.29 *continued*

25	*50*	*75*	*100*
¾ cup + 2 Tbsp + 2½ tsp	1¾ cups + 4 tsp	2¾ cups + ½ tsp	3⅔ cups
¾ cup + 3 Tbsp	1¾ cups + 4 Tbsp	2¾ cups + 1 Tbsp	3¾ cups
1 cup	2 cups	3 cups	1 qt
1¼ cups	2½ cups	3¾ cups	1¼ qt
1½ cups	3 cups	1 qt + ½ cup	1½ qt
1¾ cups	3½ cups	1¼ qt + ¼ cup	1¾ qt
2 cups	1 qt	1½ qt	2 qt
2¼ cups	1 qt + ½ cup	1½ qt + ¾ cup	2¼ qt
2½ cups	1¼ qt	1¾ qt + ½ cup	2½ qt
2¾ cups	1¼ qt + ½ cup	2 qt + ¼ cup	2¾ qt
3 cups	1½ qt	2¼ qt	3 qt
3¼ cups	1½ qt + ½ cup	2¼ qt + ¾ cup	3¼ qt
3½ cups	1¾ qt	2½ qt + ½ cup	3½ qt
3¾ cups	1¾ qt + ½ cup	2¾ qt + ¼ cup	3¾ qt
1 qt	2 qt	3 qt	1 gal
1¼ qt	2½ qt	3¾ qt	1¼ gal
1½ qt	3 qt	1 gal + 2 cups	1½ gal
1¾ qt	3½ qt	1¼ gal + 1 cup	1¾ gal
2 qt	1 gal	1½ gal	2 gal
2¼ qt	1 gal + 2 cups	1½ gal + 3 cups	2¼ gal
2½ qt	1¼ gal	1¾ gal + 2 cups	2½ gal
2¾ qt	1¼ gal + 2 cups	2 gal + 1 cup	2¾ gal
3 qt	1½ gal	2¼ gal	3 gal
3 qt + 1 cup	1½ gal + 2 cups	2¼ gal + 3 cups	3¼ gal
3½ qt	1¾ gal	2½ gal + 2 cups	3½ gal
3½ qt + 1 cup	1¾ gal + 2 cups	2¾ gal + 1 cup	3¾ gal
1 gal	2 gal	3 gal	4 gal
1 gal + 1 cup	2 gal + 2 cups	3 gal + 3 cups	4¼ gal
1 gal + 2 cups	2¼ gal	3¼ gal + 2 cups	4½ gal
1 gal + 3 cups	2¼ gal + 2 cups	3½ gal + 1 cup	4¾ gal
1¼ gal	2½ gal	3¾ gal	5 gal
1¼ gal + 1 cup	2½ gal + 2 cups	3¾ gal + 3 cups	5¼ gal

TABLE 1.29 *continued*

200	*300*	*400*	*500*
1¾ qt + ⅓ cup	2¾ qt	3½ qt + ⅔ cup	1 gal + 1⅔ cups
1¾ qt + ½ cup	3 qt + ¼ cup	1 gal	1 gal + 3¾ cups
2 qt	3 qt	1 gal	1¼ gal
2½ qt	3¾ qt	1¼ gal	1½ gal + 1 cup
3 qt	1 gal + 2 cups	1½ gal	1¾ gal + 2 cups
3½ qt	1¼ gal + 1 cup	1¾ gal	2 gal + 3 cups
1 gal	1½ gal	2 gal	2½ gal
1 gal + 2 cups	1½ gal + 3 cups	2¼ gal	2¾ gal + 1 cup
1¼ gal	1¾ gal + 2 cups	2½ gal	3 gal + 2 cups
1¼ gal + 2 cups	2 gal + 1 cup	2¾ gal	3¼ gal + 3 cups
1½ gal	2¼ gal	3 gal	3¾ gal
1½ gal + 2 cups	2¼ gal + 3 cups	3¼ gal	4 gal + 1 cup
1¾ gal	2½ gal + 2 cups	3½ gal	4¼ gal + 2 cups
1¾ gal + 2 cups	2¾ gal + 1 cup	3¾ gal	4½ gal + 3 cups
2 gal	3 gal	4 gal	5 gal
2½ gal	3¾ gal	5 gal	6¼ gal
3 gal	4½ gal	6 gal	7½ gal
3½ gal	5¼ gal	7 gal	8¾ gal
4 gal	6 gal	8 gal	10 gal
4½ gal	6¾ gal	9 gal	11¼ gal
5 gal	7½ gal	10 gal	12½ gal
5½ gal	8¼ gal	11 gal	13¾ gal
6 gal	9 gal	12 gal	15 gal
6½ gal	9¾ gal	13 gal	16¼ gal
7 gal	10½ gal	14 gal	17½ gal
7½ gal	11¼ gal	15 gal	18¾ gal
8 gal	12 gal	16 gal	20 gal
8½ gal	12¾ gal	17 gal	21¼ gal
9 gal	13½ gal	18 gal	22½ gal
9½ gal	14¼ gal	19 gal	23¾ gal
10 gal	15 gal	20 gal	25 gal
10½ gal	15¾ gal	21 gal	26¼ gal

continues

TABLE 1.29 *continued*

25	*50*	*75*	*100*
1¼ gal + 2 cups	2¾ gal	4 gal + 2 cups	5½ gal
1¼ gal + 3 cups	2¾ gal + 2 cups	4¼ gal + 1 cup	5¾ gal
1½ gal	3 gal	4½ gal	6 gal
1½ gal + 1 cups	3 gal + 2 cups	4½ gal + 3 cups	6½ gal
1½ gal + 2 cups	3¼ gal	4¾ gal + 2 cups	6½ gal
1½ gal + 3 cups	3¼ gal + 2 cups	5 gal + 1 cup	6¾ gal
1¾ gal	3½ gal	5¼ gal	7 gal

TABLE 1.29 *continued*

200	*300*	*400*	*500*
11 gal	16½ gal	22 gal	27½ gal
11½ gal	17¼ gal	23 gal	28¾ gal
12 gal	18 gal	24 gal	30 gal
12½ gal	18¾ gal	25 gal	31¼ gal
13 gal	19½ gal	26 gal	32½ gal
13½ gal	20¼ gal	27 gal	33¾ gal
14 gal	21 gal	28 gal	35 gal

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Directions for Using Table 1.30

Many quantity recipes can be expanded from home-size recipes. Table 1.30 is useful when enlarging small-quantity recipes. Instructions for using this table follow:

1. Locate column that corresponds to the yield of the recipe to be increased. For example, if the recipe yields 8 portions, use the figures in the first column under the heading 8.
2. Locate the ingredient amount for each ingredient to be adjusted. Example: The original recipe of 8 portions calls for 1 Tbsp sugar; find 1 Tbsp in the column marked 8.
3. Locate the amount on the same line under the heading for the desired yield. Example: To increase the original recipe for 8 servings to 24, locate under the 24 column heading the number on the same line with the 1 Tbsp in the 8 column. In the case of 1 Tbsp sugar for 8 portions the enlarged amount is 3 Tbsp.
4. Repeat this procedure for each ingredient in the recipe. Refer to Table 1.26 for rounding off awkward fractions and complicated measurements.

Abbreviations in this table include:

- tsp = teaspoon
- Tbsp = tablespoon
- qt = quart
- gal = gallon
- (b) = too small for accurate measure; use caution
- (r) = slightly rounded
- (s) = scant

Measuring spoon sizes are:

- 1 Tbsp
- 1 tsp
- ½ tsp
- ¼ tsp
- for ¾ tsp combine ½ tsp + ¼ tsp
- for ⅛ tsp use half of the ¼ tsp

Equivalents include:

- 3 tsp = 1 Tbsp
- 4 Tbsp = ¼ cup
- 5 Tbsp + 1 tsp = ⅓ cup
- 8 Tbsp = ½ cup
- 10 Tbsp + 2 tsp = ⅔ cup
- 12 Tbsp = ¾ cup
- 16 Tbsp = 1 cup
- 4 cups = 1 qt
- 4 qt = 1 gal

TABLE 1.30 Direct-reading table for increasing home-size recipes with ingredient amounts given in volume measurement and divisible by 8 (pp. 64–67)

8	*16*	*24*	*32*
(b)	(b)	⅛ tsp	⅛ tsp (r)
(b)	⅛ tsp (r)	¼ tsp	¼ tsp(r)
¼ tsp (s)	¼ tsp (r)	½ tsp	¾ tsp (s)
¼ tsp	½ tsp	¾ tsp	1 tsp
¼ tsp (r)	¾ tsp(r)	1 tsp	1¼ tsp(r)
½ tsp (s)	¾ tsp (r)	1¼ tsp	1¾ tsp (s)
½ tsp	1 tsp	1½ tsp	2 tsp
½ tsp (r)	1¼ tsp (s)	1¾ tsp	2¼ tsp (r)
¾ tsp (s)	1¼ tsp (r)	2 tsp	2¾ tsp (r)
¾ tsp	1½ tsp	2¼ tsp	1 Tbsp
¾ tsp (r)	1¾ tsp (s)	2½ tsp	1 Tbsp + ¼ tsp (r)
1 tsp (s)	1¾ tsp (r)	2¾ tsp	1 Tbsp + ¾ tsp (s)
1 tsp	2 tsp	1 Tbsp	1 Tbsp + 1 tsp
1½ tsp	1 Tbsp	1½ Tbsp	2 Tbsp
2 tsp	1 Tbsp + 1 tsp	2 Tbsp	2 Tbsp + 2 tsp
2½ tsp	1 Tbsp + 2 tsp	2½ Tbsp	3 Tbsp + 1 tsp
1 Tbsp	2 Tbsp	3 Tbsp	¼ cup
1 Tbsp + ½ tsp	2 Tbsp + 1 tsp	3½ Tbsp	¼ cup + 2 tsp
1 Tbsp + 1 tsp	2 Tbsp + 2 tsp	¼ cup	⅓ cup
1 Tbsp + 2¼ tsp	3 Tbsp + 2¾ tsp	⅓ cup	¼ cup + 3 Tbsp
2 Tbsp + 2 tsp	⅓ cup	½ cup	⅔ cup
3 Tbsp + 1¾ tsp	⅓ cup + 5 tsp	⅔ cup	¾ cup + 2 Tbsp
¼ cup	½ cup	¾ cup	1 cup
⅓ cup	⅔ cup	1 cup	1⅓ cups
⅓ cup + 4 tsp	¾ cup + 4 tsp	1¼ cups	1⅔ cups
⅓ cup + 5¼ tsp	⅔ cup + 3½ Tbsp	1⅓ cups	1¾ cups + 1¼ tsp
½ cup	1 cup	1½ cups	2 cups
½ cup + 2¼ tsp	1 cup + 5¼ tsp	1⅔ cups	2 cups + 3½ Tbsp
½ cup + 4 tsp	1 cup + 3 Tbsp	1¾ cups	2⅓ cups
⅔ cup	1⅓ cups	2 cups	2⅔ cups

TABLE 1.30 *continued*

48	*64*	*96*
¼ tsp	¼ tsp (r)	½ tsp
½ tsp	¾ tsp (s)	1 tsp
1 tsp	1¼ tsp (r)	2 tsp
1½ tsp	2 tsp	1 Tbsp
2 tsp	2¾ tsp (s)	1 Tbsp + 1 tsp
2½ tsp	1 Tbsp + ¼ tsp	1 Tbsp + 2 tsp
1 Tbsp	1 Tbsp + 1 tsp	2 Tbsp
1 Tbsp + ½ tsp	1 Tbsp + 1¾ tsp	2 Tbsp + 1 tsp
1 Tbsp + 1 tsp	1 Tbsp + 2¼ tsp	2 Tbsp + 2 tsp
1 Tbsp + 1½ tsp	2 Tbsp	3 Tbsp
1 Tbsp + 2 tsp	2 Tbsp + ¾ tsp	3 Tbsp + 1 tsp
1 Tbsp + 2½ tsp	2 Tbsp + 1¼ tsp	3 Tbsp + 2 tsp
2 Tbsp	2 Tbsp + 2 tsp	¼ cup
3 Tbsp	¼ cup	⅓ cup + 2 tsp
¼ cup	⅓ cup	½ cup
¼ cup + 1 Tbsp	⅓ cup + 4 tsp	½ cup + 2 Tbsp
⅓ cup + 2 tsp	½ cup	¾ cup
¼ cup + 3 Tbsp	½ cup + 4 tsp	¾ cup + 2 Tbsp
½ cup	⅔ cup	1 cup
⅔ cup	¾ cup + 2 Tbsp	1⅓ cups
1 cup	1⅓ cups	2 cups
1⅓ cups	1¾ cups	2⅔ cups
1½ cups	2 cups	3 cups
2 cups	2⅔ cups	1 qt
2½ cups	3⅓ cups	1¼ qt
2⅔ cups	3½ cups + 2½ tsp	1¼ qt + ⅓ cup
3 cups	1 qt	1½ qt
3⅓ cups	4¼ cups + 3 Tbsp	1½ qt + ⅔ cup
3½ cups	1 qt + ⅔ cups	1¾ qt
1 qt	1¼ qt + ⅓ cup	2 qt

continues

TABLE 1.30 *continued*

8	*16*	*24*	*32*
¾ cup	1½ cups	2¼ cups	3 cups
¾ cup + 1¼ tsp	1½ cups + 2¾ tsp	2⅓ cups	3 cups + 2 Tbsp
¾ cup + 4 tsp	1⅔ cups	2½ cups	3⅓ cups
⅔ cup + 3½ Tbsp	1¾ cups + 1¼ tsp	2⅔ cups	3½ cups + 1 Tbsp
⅔ cup + ¼ cup	1¾ cups + 4 tsp	2¾ cups	3⅔ cups
1 cup	2 cups	3 cups	1 qt
1 cup + 4 tsp	2 cups + 2½ Tbsp	3¼ cups	1 qt + ⅓ cup
1 cup + 5¼ tsp	2 cups + 3½ Tbsp	3⅓ cups	4¼ cups + 3 Tbsp
1 cup + 2 Tbsp + 2 tsp	2¼ cups + 4 tsp	3½ cups	1 qt + ⅔ cup
1 cup + 3½ Tbsp	2¼ cups + 3 Tbsp	3⅔ cups	4¾ cups + 2 Tbsp
1¼ cups	2½ cups	3¾ cups	1¼ qt
1⅓ cups	2⅔ cups	1 qt	1¼ qt + ⅓ cup
1⅔ cups	3⅓ cups	1¼ qt	1½ qt + ⅔ cup
2 cups	1 qt	1½ qt	2 qt
2⅓ cups	1 qt + ⅔ cup	1¾ qt	2¼ qt + ⅓ cup
2⅔ cups	1¼ qt + ⅓ cup	2 qt	2½ qt + ⅔ cup
3 cups	1½ qt	2¼ qt	3 qt
3⅓ cups	1½ qt + ⅔ cup	2½ qt	3¼ qt + ⅓ cup
3⅔ cups	1¾ qt + ⅓ cup	2¾ qt	3½ qt + ⅔ cup
1 qt	2 qt	3 qt	1 gal
1 qt + ⅓ cup	2 qt + ⅔ cup	3¼ qt	1 gal + 1⅓ cups
1 qt + ⅔ cup	2¼ qt + ⅓ cup	3½ qt	1 gal + 2⅔ cup
1¼ qt	2½ qt	3¾ qt	1¼ gal
1¼ qt + ⅓ cup	2½ qt + ⅔ cup	1 gal	1¼ gal + 1⅓ cups
1½ qt + ⅔ cup	3¼ qt + ⅓ cup	1¼ gal	1½ gal + 2⅔ cups
2 qt	1 gal	1½ gal	2 gal

TABLE 1.30 *continued*

48	*64*	*96*
1 qt + ½ cup	1½ qt	2¼ qt
1 qt + ⅔ cup	1½ qt + ¼ cup	2¼ qt + ⅓ cup
1¼ qt	1½ qt + ⅔ cup	2½ qt
1¼ qt + ⅓ cup	1¾ qt + 2 Tbsp	2½ qt + ⅔ cup
1¼ qt + ½ cup	1¾ qt + ⅓ cup	2¾ qt
1½ qt	2 qt	3 qt
1½ qt + ½ cup	2 qt + ⅔ cup	3¼ qt
1½ qt + ⅔ cup	2 qt + ¾ cup + 2 Tbsp	3¼ qt + ⅓ cup
1¾ qt	2¼ qt + ⅓ cup	3½ qt
1¾ qt + ⅓ cup	2¼ qt + ¾ cup	3 qt +2⅔ cups
1¾ qt + ½ cup	2½ qt	3 qt + 3 cups
2 qt	2¾ qt + ⅓ cup	1 gal
2½ qt	3¼ qt + ⅓ cup	1¼ gal
3 qt	1 gal	1½ gal
3½ qt	1 gal + 2⅔ cups	1¾ gal
1 gal	1¼ gal + 1⅓ cups	2 gal
1 gal + 2 cups	1½ gal	2¼ gal
1¼ gal	1½ gal + 2⅔ cups	2½ gal
1¼ gal + 2 cups	1¾ gal + 1⅓ cups	2¾ gal
1½ gal	2 gal	3 gal
1½ gal + 2 cups	2 gal + 2⅔ cups	3¼ gal
1¾ gal	2¼ gal + 1⅓ cups	3½ gal
1¾ gal + 2 cups	2½ gal	3¾ gal
2 gal	2½ gal + 2⅔ cups	4 gal
2½ gal	3¼ gal + 1⅓ cups	5 gal
3 gal	4 gal	6 gal